









Digitized by the Internet Archive  
in 2020 with funding from  
Wellcome Library

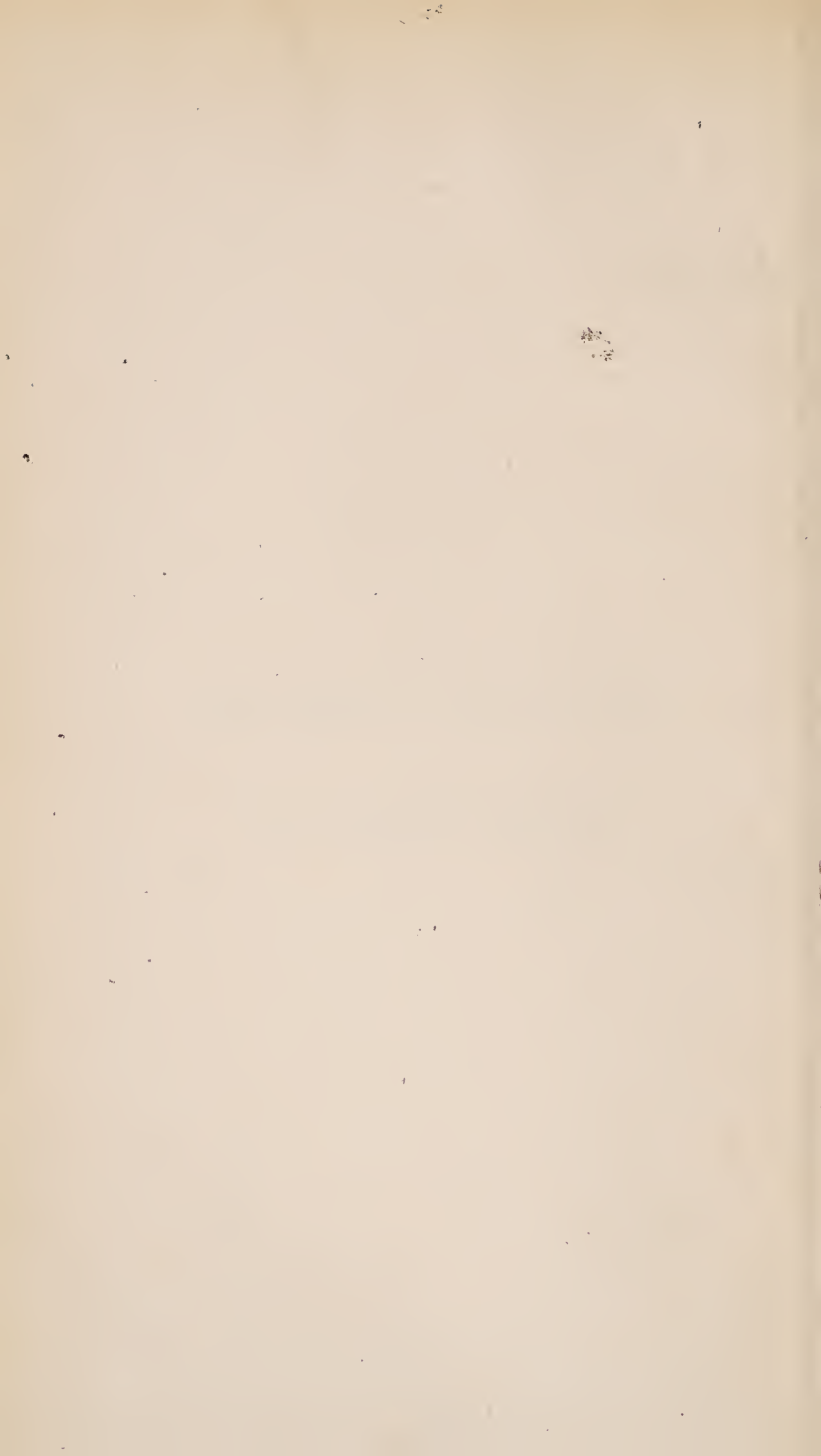
<https://archive.org/details/s2id13656470>



BRAITHWAITE'S RETROSPECT.

---

VOL. LXXXIII, JANUARY—JUNE, 1881.



THE  
RETROSPECT OF MEDICINE:

BEING

A HALF-YEARLY JOURNAL

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND  
PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

W. BRAITHWAITE, M.D.

LATE LECTURER ON MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN  
AT THE LEEDS SCHOOL OF MEDICINE, ETC.

AND

JAMES BRAITHWAITE, M.D. LOND.

FELLOW AND LATE VICE-PRESIDENT OF THE OBSTETRICAL  
SOCIETY OF LONDON.

LECTURER ON DISEASES OF WOMEN AND CHILDREN AT LEEDS SCHOOL OF MEDICINE.  
SURGEON TO THE LEEDS HOSPITAL FOR WOMEN AND CHILDREN.

VOL. LXXXIII. JANUARY—JUNE, 1881.

LONDON:

SIMPKIN, MARSHALL, AND CO.

EDINBURGH: OLIVER AND BOYD. DUBLIN: HODGES, FOSTER, AND CO.  
AND FANNIN AND CO.

MDCCCLXXXI.

*Letters for the Editors to be addressed*

DR. WM. BRAITHWAITE, Clarendon House, Clarendon  
Road, Leeds; or

DR. JAMES BRAITHWAITE, Clarendon Road, Leeds.

*Parcels of Books, &c. to*

Messrs. SIMPKIN, MARSHALL, & Co., London.



# CONTENTS OF VOL. LXXXIII.

---

## SYNOPSIS.

---

### PRACTICAL MEDICINE.

#### DISEASES AFFECTING THE SYSTEM GENERALLY.

ARTICLE.	AUTHOR.	PAGE.
1 On Typhus Fever and its Treatment .. ..	<i>Dr. R. Fitzmaurice</i>	1
2 On Typhoid Fever .. ..	<i>Dr. Henry Kennedy</i>	5
3 On the Antipyretic Treatment of Typhoid Fever by means of Sodium Salicylate .. ..	<i>Dr. Henry Tomkins</i>	10
4 On the Antiseptic Treatment of Enteric Fever ..	<i>Dr. C. E. Shelly</i>	13
5 Notes on Typhoid Fever .. ..	<i>Dr. F. A. McEwen</i>	15
6 On the Diagnosis of the Mildest Forms of Enteric Fever .. ..	<i>Dr. Christian Baumler</i>	17
7 Remarks on the Treatment of Enteric Fever ..	<i>Dr. John Syer Bristowe</i>	19
8 On Aconite in Remittent Fever .. ..	<i>Dr. Gerald Bomford</i>	26
9 On Some Points in the Pathology and Treatment of Acute Rheumatism and of Diabetes .. ..	<i>Dr. P. W. Latham</i>	29
10 On the Pathology and Treatment of Gout ..	<i>Dr. Austin Meldon</i>	37
11 On the Local Origin of Cancer .. ..	<i>Jonathan Hutchinson, Esq.</i>	41
12 Cases of Epithelioma .. ..	<i>Jonathan Hulke, Esq.</i>	54

---

#### DISEASES OF THE ORGANS OF CIRCULATION.

13 On the Diagnosis of the Fatty Heart .. ..	<i>Dr. Milner Fothergill</i>	58
14 On Paroxysmal Angina Pectoris and its Treatment	<i>Dr. George W. Balfour</i>	62
15 On the Pathology of Angina Pectoris .. ..	<i>Dr. Vincent Harris</i>	69
16 On Anæmia .. ..	<i>Dr. Sidney Coupland</i>	75
17 On the Blood Cells in Anæmia .. ..	<i>Dr. W. G. Tacey</i>	81

## DISEASES OF THE ORGANS OF RESPIRATION.

ARTICLE.		AUTHOR.	PAGE.
18	On the Infection of Phthisis and its Bearings on Treatment .. .. .	<i>Dr. Hunter Mackenzie</i>	82
19	On a Case of Phthisis ab Hæmoptoe .. ..	<i>Dr. W. T. Gairdner</i>	86
20	On the Prognosis and Treatment of Chronic Diseases of the Chest in Relation to Modern Pathology .. .. .	<i>Dr. James E. Pollock</i>	90
21	On Fraentzel's Antiseptic Treatment of Empyema	<i>Dr. G. B. Ferguson</i>	96
22	On Respiratory Irrigation: a New Method of After-Treatment in Empyema .. ..	<i>Dr. C. McIvor Goyder</i>	98
23	On the Treatment of Asthma by the Induced Current .. .. .	<i>Dr. I. Burney Yeo</i>	101

---

## DISEASES OF THE ORGANS OF DIGESTION.

24	On Catarrh of the Stomach in Children .. ..	<i>Dr. Eustace Smith</i>	103
25	On Flatulent Distension of the Colon .. ..	<i>Dr. R. W. Burnet</i>	108
26	On the Aspirator as an Aid to Diagnosis in Cases of Obstruction of the Bowel, with Description of an Enterotomy Tube .. .. .	<i>Dr. Roderick Maclaren</i>	112

---

## DISEASES OF THE URINARY ORGANS.

27	Notes on the Pathology of the Urine .. ..	<i>Dr. Charles A. Cameron</i>	115
----	---	-------------------------------	-----



## SURGERY.

## DISEASES OF THE BONES, JOINTS, ETC.

ARTICLE.	AUTHOR.	PAGE.
28 On an Improved Method for Excising the Wrist-Joint ( <i>with a woodcut</i> ) .. ..	<i>Dr. W. Roger Williams</i>	117
29 On the Treatment of Club-Foot .. ..	<i>Dr. Crawford Renton</i>	119
30 On the Treatment of Genu Valgum by Condylotomy with the Chisel ... ..	<i>R. L. Swan, Esq.</i>	120
31 On the Treatment of Tarsal Tumours by Electrolysis ... ..	<i>Dr. Julius Althaus</i>	123
32 On Antiseptic Surgery as Practised under Prof. Esmarch .. ..	<i>E. Muirhead Little, Esq.</i>	124
33 On the Preparation of Chromicised Catgut Ligatures .. ..	<i>Prof. J. Lister</i>	127
34 On Salicylic Silk as a Surgical Dressing ..	<i>A. F. McGill, Esq.</i>	141
35 Note on a Mode of Antiseptic Dressing ..	<i>Walter Pye, Esq.</i>	144
36 On Some Medical Complications of Surgical Practice .. ..	<i>Dr. Hector Cameron</i>	146
37 On Some Points connected with the Immediate Treatment of Wounds:—Elastic Webbing as a Tourniquet; the Old Ligature; Carbolised Catgut Ligatures; Chromicised Catgut Ligatures .. ..	<i>Dr. William Macewen</i>	152
38 On the Drainage of Wounds—Horse-Hair and Chicken-Bone Drains—Button Sutures ...	<i>Dr. William Macewen</i>	157
39 On the Pathogeny and Treatment of Bronchocele or Goitre .. ..	<i>Dr. Edward Woakes</i>	164
40 On Some Points in Tracheotomy .. ..	<i>Dr. David Foulis</i>	171
41 Case of Malignant Disease of Labium—Operation with Thermo-Cautery .. ..	<i>Dr. W. L. Reid</i>	177

## DISEASES OF THE NERVES.

42 On Cases of Multiple Neuroma .. ..	<i>Dr. Mitchell Prudden</i>	177
---------------------------------------	-----------------------------	-----

## ORGANS OF CIRCULATION.

43 On a Case of Aneurism of the Aorta treated by Galvano-Puncture ... ..	<i>Dr. William M. Ord</i>	180
44 On Cases of Aneurism treated by the Use of the Catgut Ligature ... ..	<i>Richard Barwell, Esq.</i>	184
45 On Cases of Aneurism treated by the Catgut Ligature ... ..	<i>W. Spencer Watson, Esq.</i>	185
46 Further Researches on the Ethylate of Sodium in the Treatment of Nævus and other Forms of Disease ... ..	<i>Dr. B. W. Richardson</i>	187

## ALIMENTARY CANAL.

ARTICLE.		AUTHOR.	PAGE.
47	On the Radical Treatment of Hernia with the Aid of Catgut and Listerian Antiseptics ... ..	<i>T. Annandale, Esq.</i>	198
48	On the Immediate Cure of Inguinal Hernia by a New Instrument ... ..	<i>W. D. Spanton, Esq.</i>	204
49	On a Serrated and Cutting Cautery in the Operation for Hemorrhoids and Prolapsus Ani ( <i>with a woodcut</i> ) ... ..	<i>Henry Smith, Esq.</i>	207

## ORGANS OF URINE AND GENERATION.

50	On Lithotrity at a Single Sitting ... ..	<i>Sir Henry Thompson</i>	208
51	On Prolapse of Uterus and Bladder—Operation for Restoration of Perineum... ..	<i>Dr. W. L. Reid</i>	212
52	On Bladder Drainage—Chronic Cystitis... ..	<i>John Chiene, Esq.</i>	214
53	On Chronic Enlargement of the Prostate ... ..	<i>Thomas Smith, Esq.</i>	218

## AFFECTIONS OF THE EYE AND EAR.

54	On an Improved Operation for a New Pupil after Cataract Operations ... ..	<i>Dr. Edward G. Loring</i>	222
55	On the After-Treatment of Cataract ... ..	<i>Henry Power, Esq.</i>	228
56	On Inflammation and other Diseases of the Iris— 1 Hyperæmia of the Iris; 2 Plastic Iritis; 3 Serous Iritis; 4 Parenchymatous; 5 Syphilitic	<i>Dr. J. R. Wolfe</i>	235
57	On the Treatment of Aural Polypi by Rectified Spirits .. ..	<i>Dr. P. M' Bride</i>	241

## DISEASES OF THE SKIN, ETC.

58	On a New Method of Performing Plastic Operations .. ..	<i>Dr. J. R. Wolfe</i>	243
59	On the Treatment of Psoriasis by Pyrogallie Acid	<i>Dr. George Thin</i>	246
60	On Cases of Lupus Treated by Scraping with Volkmann's Sharp Spoon .. ..	<i>Rickman J. Godlee, Esq.</i>	248
61	On Anthrax and Anthracæmia in Woolsorters, Heifers, and Sheep .. ..	<i>Dr. John H. Bell</i>	252
62	On the Treatment of Ringworm .. ..	<i>Malcolm Morris, Esq.</i>	256
63	On the Treatment of Ringworm by Croton Oil ..	<i>Dr. Robert Liveing</i>	260
64	On Eczema Ditorum and its Treatment ..	<i>Dr. J. Magee Finny</i>	262
65	On Saccharine Urine in Chronic Eczema ..	<i>Dr. Robert Liveing</i>	267

# MIDWIFERY, AND THE DISEASES OF WOMEN AND CHILDREN.

ARTICLE.	AUTHOR.	PAGE.
66 On a Case of Rupture of the Uterus—Gastrotomy and Recovery .. .. .	<i>Dr. E. Miles Willett</i>	269
67 On the Effects of the Induced Current upon Parturition .. .. .	<i>Dr. Walter J. Kilner</i>	271
68 On the Long and Short Forceps in Midwifery, being a Rough Analysis of 200 Forceps Deliveries .. .. .	<i>Dr. James More</i>	275
69 On the Treatment of Pruritus Vulvæ .. .. .	<i>Dr. Arthur Wiltshire</i>	279
70 On the Diagnosis of Tumours of the Mamma .. .. .	<i>Dr. Samuel W. Gross</i>	284
71 On Dysmenorrhœa by Retention—Treatment .. .. .	<i>Dr. Robert Barnes</i>	286
72 Case of Malignant Disease of Cervix Uteri—Operation with Galvanic Cautery .. .. .	.. .. .	291
73 Removable Axis-Traction Rods for Midwifery Forceps ( <i>with two woodcuts</i> ) .. .. .	<i>Dr. J. S. Lyon</i>	292

## ADDENDA.

74 On Surgical Anæsthesia Maintained by the Combined Use of Morphia and Chloroform .. .. .	<i>Dr. Alexander Crombie</i>	296
75 On the Treatment of Anæmia .. .. .	<i>Dr. Sidney Coupland</i>	301
76 On the Use of Nitro-Glycerine in Bright's Disease and in the Vascular Tension of the Aged .. .. .	<i>A. W. Mayo Robson, Esq.</i>	304
77 On the Salicylates of Soda and other Bases .. .. .	<i>Dr. Prosser James</i>	308
78 Description of a New Clinical Thermograph ( <i>with three woodcuts</i> ) .. .. .	<i>W. D. Bowkett, Esq.</i>	311
79 Liquor Ferri Hypophosphatis Compositus. The Hypophosphites (Iron, Soda, Lime, and Magnesia) Combined Soluble Tonic for Children, &c. .. .. .	<i>Dr. F. Churchill</i>	314
80 On Ingluvin .. .. .	<i>Dr. G. H. R. Dabbs</i>	319

## SHORT ARTICLES IN SYNOPSIS,

NOT INCLUDED IN THE FOREGOING LISTS.

On Iodine as a Substitute for Quinia in Intermittent Fever .. .. .	<i>Dr. Grinnell</i>	xiii
On Chlorate of Potash in Convulsions and Epileptic Attacks in Children .. .. .	<i>Dr. Alex. Harkin</i>	xv
On Picrotoxin in Epilepsy .. .. .	<i>M. Hambursin</i>	xv
On Citrate of Caffeine in Sick Headache .. .. .	<i>Dr. Beard</i>	xvi
On Guarana in Sick Headache .. .. .	<i>Dr. Wilks</i>	xvii
On Bromohydric Acid in Headache, Nervous Exhaustion, and Vomiting of Pregnancy .. .. .	<i>Dr. Milner Fothergill</i>	xvii

ARTICLE.	AUTHOR.	PAGE
On Croton Chloral <i>versus</i> Alcohol in Neuralgia ..	<i>Dr. B. W. Richardson</i>	xviii
On Crystallised Aconite in Facial Neuralgia ..	<i>Dr. A. Dumas</i>	xviii
On Gelseminum in Facial Neuralgia ..	<i>Dr. Sawyer</i>	xix
On Gelseminum in Facial Neuralgia ..	<i>Dr. G. H. H. de Wolfe</i>	xix
On Anodyne Amyl Colloid in Neuralgia, Sciatica, Lumbago, and Muscular Rheumatism ..		xix
On the Treatment of Pain by Mechanical Vibrations ..	<i>Dr. Mortimer Granville</i>	xx
On Croton Chloral Hydrate in Tic-Douloureux, Pertussis, &c. .. ..	<i>Dr. Oscar Liebreich</i>	xxi
On the Treatment of Angina Pectoris ..	<i>Dr. Walter Moxon</i>	xxiv
On Restoration of the Heart's Action when it has Ceased to Beat .. ..	<i>Dr. J. C. Reid</i>	xxvi
On Alcohol as an Antispasmodic—Spasmodic Asthma ..	<i>Dr. B. W. Richardson</i>	xxvi
On Nitrite of Amyl in Angina, Spasmodic Asthma, and Chloroform Poisoning .. ..	<i>Dr. F. A. Burrall</i>	xxviii
On Ethyl Iodide on Asthma .. ..	<i>Professor See</i>	xxix
On Drug Smoking in Asthma .. ..	<i>Dr. R. E. Thompson</i>	xxix
On the Arrest of Cough in Phthisis .. ..	<i>Dr. Landouzy</i>	xxx
On the Operation for Fistula-in-Ano .. ..	<i>John Gay, Esq.</i>	xxxiv
On Perfectly Bloodless Operations .. ..	<i>Prof. Esmarch</i>	xl
On Plastic Splints—Gamgee's Millboard Splints ..	<i>Prof. S. Gamgee</i>	xlvi
On Asbestos Felt for Plastic Splints .. ..	<i>Dr. S. Eldridge</i>	xlvi
On the Treatment of Sprained Ankle .. ..	<i>Dacre Fox, Esq.</i>	xlvi
On the Treatment of Gonorrhœa .. ..	<i>W. W. Cheyne, Esq.</i>	xlviii
On Chronic Eczema of the Palms .. ..	<i>Dr. D. Bulkley</i>	li
On the Use of Carbolic Acid in Prurigo .. ..	<i>M. Lallier</i>	liii
On the Treatment of Pruritus Ani .. ..	<i>Dr. Packard</i>	liii
On the Treatment of Ringworm .. ..	<i>Wyndham Cottle, Esq.</i>	lvi
On the Use of Croton Oil in Ringworm .. ..	<i>Dr. de Lacharriere</i>	lvi
Improved Mode of Epilation in Ringworm ..	<i>Dr. Balmanno Squire</i>	lvii
On Chrysophanic Acid in Ringworm and Psoriasis ..	<i>Dr. Balmanno Squire</i>	lviii
Formulæ for Soothing Ointments in Skin Diseases ..	<i>Dr. McCall Anderson</i>	lviii
On the Use of Sulphur in Diseases of the Skin ..	<i>Dr. Bulkley</i>	lix
On the Treatment of Aural Polypi .. ..	<i>M. Politzer</i>	lx
On Salicylate of Atropine in Eye Affections ..	<i>Dr. Tichborne</i>	lxii
New Method of Performing Sclerotomy .. ..	<i>Dr. Galezowski</i>	lxii
On the Treatment of Dysmenorrhœa .. ..	<i>Dr. B. W. Richardson</i>	lxiv
On the Antiseptic System in Ovariectomy .. ..	<i>Dr. G. G. Bantock</i>	lxvii
Ether <i>versus</i> Chloroform in Parturition .. ..	<i>Dr. W. P. Nesbitt</i>	lxvii
On Perineal Restoration for Relief of Prolapse of Uterus and Bladder .. ..	<i>Dr. Reid</i>	lxix
On Sponge Tents for Dilatation of the Os and Cervix Uteri .. ..	<i>Dr. Cole</i>	lxx
On Ingluvin in the Vomiting of Pregnancy .. ..	<i>Dr. G. H. R. Dabbs</i>	lxxi
Antidotes .. ..		lxxi
On Bromide of Ethyl as an Anæsthetic .. ..	<i>Dr. Isaac Ott</i>	lxxii

## INDEX.

GENERAL INDEX, VOLS. LXXVII.—LXXXII. INCLUSIVE.



## SYNOPSIS.

---

AN ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THIS VOLUME, WITH OTHER SHORT ARTICLES FROM THE MEDICAL JOURNALS, SHOWING THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS DURING THE HALF-YEAR. ARRANGED ALPHABETICALLY.

---

### AFFECTIONS OF THE SYSTEM GENERALLY.

CANCER.—*Local origin of.*—Cancerous action is to be regarded simply as a morbid form of nutrition educed in certain temperaments and at certain ages by local irritation. It becomes constitutional by the direct absorption of the plasma and cell-elements of the new growth; and in proportion to the succulency of the new growth is, as a rule, the rapidity with which the blood becomes contaminated. Like all other blood-diseases, cancer in its second, or constitutional, stage is liable to be transmitted from parent to child. The worst and most rapid forms of cancer are those which occur in young persons as the consequence of hereditary taint. In many of those who have inherited distantly a cancerous taint, local irritation is the means of evoking such taint into activity, and in such cases the resulting disease is to be regarded partly as local and partly as constitutional. It is a fact beyond dispute that some forms of cancer are in their early stages purely local, and they are curable by local means. As in most cases it is impossible to estimate the degree of constitutional predisposition, it becomes the duty of the surgeon, whenever feasible, to give his patient the benefit of the doubt, and remove the disease *immediately it is discovered*, in the hope that it may prove to have been merely local. (Mr. Jonathan Hutchinson, p. 41.)

GOUT AND RHEUMATISM AFTER INJURIES.—Gout and rheumatism attack some people after almost any injury. Sir James Paget says: "People thus combustible, are not rare; you may liken them to lucifer matches; gout explodes in them whenever they are roughly injured. It may appear localised either in the injured part or in any other; for the effect of the injury may be two-fold; it disturbs the nutrition of the part on which it is inflicted, and, in a less degree, and consequently,

it may disturb the general health, and thus induce the occurrence of gout and its localisation in some part even more apt for it than that which is injured. Hence, you may meet with two different groups of cases. In the one you find men, whom you may suppose to have been just ready for a seemingly spontaneous attack of gout, who casually hurt their feet or their hands, or wrench one of their joints, and in a few hours, or in a day or two, the gout appears at the injured part. In the other group are those who are injured in some part not usually apt for gouty inflammation, and in whom, while they are not yet recovered from the injury, gout appears in some distant part. Among them you may have to count some of those on whom you have operated. Your surgical injury, together with the associated mental disturbance, will have sufficed to let appear the gout, which might else have been repressed or healthily concealed. I have known a patient suffer a sharp attack of gout after each of three operations which he has undergone." (Dr. Hector Cameron, p. 146.)

ENTERIC FEVER.—*Antiseptic Treatment.*—In using carbolic acid and iodine Dr. Shelly was struck by the early and rapid fall of temperature, the retardation and steadying of the pulse, the quickness with which the motions lessened in number and improved in quality, the cleanly tongue, the absence of sordes, the early removal of the abdominal pain and tenderness, the refreshing sleep, the comparatively slight emaciation, and the remarkable unanimity with which all the patients agreed in expressing themselves as feeling quite comfortable after the first few doses of the remedy. No increase of temperature was observed to attend the eruptions of the five successive crops of spots which appeared in the most severe case. No complications were noted. The formula recommended by Dr. Rothe is one to two parts of carbolic acid and one of tincture of iodine in one hundred and twenty of water; one tablespoonful to be given hourly until a decided effect is produced on pulse and temperature; thence every two hours until apyrexia follows; and it should be continued for two or three weeks. Under these circumstances, it is not surprising that, "after two or three weeks' uninterrupted administration, toxic symptoms always occurred." In my cases, a draught containing one or two minims of carbolic acid, one to three minims of tincture of iodine, half a drachm of simple syrup, and an ounce of lemon water, was given every two, three, or four hours, or even less often, without any untoward symptoms, and with satisfactory results. Dr. Rothe recommended oil of peppermint as effectually disguising the flavour of the principal ingre-



dients; but, following out a hint derived from the publication of Lebon's formula, I found essence of lemon even more effectual to this end, and more generally agreeable; and in some cases small doses of nux vomica and of nitro-hydrochloric acid were added to the mixture towards the termination of the disease. (Dr. C. E. Shelly, p. 13.)

INTERMITTENT FEVER.—*Iodine a Substitute for Quinia.*—Dr. Grinnell is able to confirm the statement of Dr. Nonodnitschauski, that when given boldly, *i.e.*, in doses of ten to twelve drops of the tincture in half-a-glass of sweetened water every eight hours, iodine will never rank second to quinia in the treatment of intermittent fevers. Dr. Grinnell, being at a distance from medical supplies, found that he had exhausted his stock of quinine, in a district where malarious disease prevailed extensively. He at first followed the plan recommended by the Russian doctor, of giving ten drops of the tincture in one-third of a glass of sweetened water thrice daily to adults, children receiving proportional doses. The results far surpassed his most sanguine expectations. Indeed he thought the statement rather extravagant, that iodine, when given as above indicated, “will never rank second to quinia in the treatment of intermittent fevers.” Subsequent experience, however, both in that country and in this, has led him to conclude that the anti-periodic powers of iodine are superior to any other remedy of the materia medica save quinia, and that it is by far the best known substitute for quinia. At that time he treated 135 cases of intermittent fever, seventy-four being males and sixty-one females; these included children, and in some instances infants. The quotidian and tertian types of the fever were the forms principally presented. He also treated four cases of diarrhoea and eight cases of neuralgia, each of malarial origin, using the same remedy, only adding astringents or opiates as indicated. One hundred and forty-seven cases were thus treated with the iodine, and the results were *fully equal to those treated with the sulphate of quinine*. The remedy seemed to act almost as by magic, in many instances the paroxysms were not repeated after the medicine was given, though the doses were repeated for a day or two after the cessation of the fever. In cases of enlarged spleen there was a more speedy reduction in the size of that organ than when the sulphate of quinia was used. One important item in its favour was the fact that it was much more agreeable to take than quinine, and this with a large part of our population proved a potent argument in its favour. The iodine at once became a more popular remedy than quinine with the masses of our people. The

nationality of those treated embraced the white, the Indian, and the negro races. (Canada Med. and Surg. Journal; and Practitioner, Jan., p. 49.)

REMITTENT FEVER.—*Aconite*.—The good effects of aconite in this class of fevers may be thus summed up. (1) It reduces the temperature. (2) It reduces the rapidity of the pulse, and makes it full and strong. (3) It cleans the tongue and restores the digestive functions. (4) It induces sleep. (5) It increases the quantity of urine, and seems to have a direct effect in removing the symptomatic congestion of the kidneys. (6) It promotes perspiration. (Dr. G. Bomford, p. 26.)

TYPHOID FEVER.—*Stimulants*.—There is no type of fever which appears to me to bear stimulants as well as typhoid. It seems not to be recognised that many adults, even in rude health, will not bear milk, and to suppose that it will agree when fever is present is surely going further than any reason would justify. At any rate, whatever the reason be, certain it is milk frequently does harm. With the views I now hold of the nature of the constitution of the patient, and to which attention has already been directed in an earlier part of these remarks, the use of stimulants comes in well; for I hold that, as a general rule, which has very few exceptions, the strumous diathesis is benefited by their use. In those cases in which it seems doubtful whether stimulants should be used my rule is to begin with a very small quantity, and I have often, in this way, literally ordered only a teaspoonful of wine at a time for each dose. (Dr. Henry Kennedy, p. 5.)

*Sodium Salicylate in Hyperpyrexia*.—Does salicylate of soda offer any, and if so, what, advantages over the means more commonly used to reduce the temperature? Foremost stands at present the cold bath. It is now matter of common experience that in the salicylates we possess the most powerful antipyretics to be found in the whole range of our therapeutic armamenta, yet it would appear that in this country at least these properties have in the treatment of typhoid been but little made use of. My routine practice has been this:—As soon as it was certain that there was a continuous temperature of more than 102° in the axilla, fifteen to twenty grains of the soda were given every two hours. This after about six doses usually reduced the temperature two or three degrees; if not, the same dose was continued a few more hours until it had done so, this seldom exceeding twenty-four hours from the commencement. The dose was then diminished one half, and given every two or three hours, increasing it through the day if there was much tendency to exacerbation towards night time. This was carried on for a period varying from three



or four to nine or ten days, seldom exceeding the latter time, when the temperature would usually be fairly normal, with a little inclination to an evening rise in many cases for a few days after the salicylate was entirely discontinued. In most of the cases the usual physiological effects were observed, and in several alcohol was freely administered with the soda, in the form of brandy, whenever the pulse was feeble or the weakened action of the heart appeared to be becoming dangerous. (Dr. H. Tomkins, p. 10.)

---

#### AFFECTIONS OF THE NERVOUS SYSTEM.

CONVULSIONS AND EPILEPTIC ATTACKS OF CHILDREN.—*Chlorate of Potash*.—Young children from the first to the sixth year, particularly those sleeping in overcrowded rooms, are subject to frequent attacks at night of screaming, with insensibility, and semi-convulsions, and somnambulism if not watched, and something approaching to the *petit mal*, due to the protracted inhalation of air deficient in oxygen and laden with carbonic acid and other morbid products—a persistence in this habit often leading to tubercle of the brain or lungs. For this condition I have always found the chlorate of potassium a sovereign remedy; and for the true convulsion and epileptic attacks of children it has proved not only curative, but, more important still, a true preventive. For the adult epileptic, although not so useful as the bromide, I have prescribed with great advantage this salt alone and in combination with the bromide. (Dr. Alex. Harkin, Dub. Med. Jour., Nov. p. 407.)

EPILEPSY.—*Picrotoxin*.—M. Hambursin has found *cocculus indicus* the most efficacious, but he has found it necessary to give it in much larger doses than are recommended by M. Planat, who first employed it in the treatment of epilepsy. He employs the tincture, and begins with a dose of ten drops morning and evening, increasing by two drops daily until he has reached the dose of sixty drops; then he increases by ten drops a month, until the dose is a hundred drops. If the attacks have ceased by this time, he continues with this dose; if not, he does not hesitate to increase the dose to a hundred and fifty drops, and would not hesitate to give still larger doses, if necessary. The use of the remedy should not be interrupted, for fear of impairing its effects. The *cocculus indicus* produces symptoms of cerebral congestion; hence it is proper to conclude that, when administered in the above manner, it keeps the cephalic vessels in a state of permanent relaxation, and thus prevents the vascular spasm which produces the sudden anæmia of the brain, the fundamental con-

dition of the initial stage of the epileptic attack. M. Hambursin concludes his paper with reports of six cases of long-standing and severe epilepsy, all of which had been treated without success with large doses of bromide of potassium, and in all of which the attacks have ceased entirely under the *cocculus indicus* treatment. (Dublin Journal of Medical Science, Oct., p. 365.)

HEADACHE.—*Citrate of Caffeine*.—Dr. Beard writes very strongly in favour of the value of caffeine in the treatment of *sick headache*. He says (New York Medical Record): This remedy I find to be useful in other forms of headache besides sick headache. In the case described, there was the feeling as of a band around the head, and great pain at times. Of the different forms of caffeine I prefer the citrate, since it seems to accomplish the desired results with a smaller dose, and more surely. I have not yet made up my mind in regard to the exact dose in which caffeine should be given, having been accustomed to pour it out in the hand, rather than to weigh it out. My present custom is to prescribe it in two grain powders, with directions to repeat every half-hour until the headache disappears. The failures with caffeine are, I am persuaded, often due to the timidity in the use of it. It is a powerful, but, in reasonable doses, not a dangerous remedy. When this remedy is given in a dose just adapted to the needs of the sufferer, it quickly and perfectly removes the pain in the head and nausea. I have known it to produce this effect in less than fifteen minutes. The use of caffeine in headache seems to be one of the most important of the special therapeutic advances of our time: *it is a genuine and solid reality, the relief it produces being too speedy and too frequent to be accounted for by coincidence or mental influence. It deserves to rank just after chloral, bromide of potassium, hypodermic injections, and electricity.* Caffeine, it will be remembered, is the active principle common to coffee, tea, chocolate, and guarana, and is preferable to the latter in the treatment of headache, not only because it is more sure and speedy, but also because it is more convenient and agreeable, and never refused by the stomach. It is better to give the citrate of caffeine just as the headache is coming on, but it may be given with success at almost any stage, and when the proper dose is taken it seems to take up pain and bear it away. Dr. Beard remarks that the marked relief obtained in the case of headache related by him suggests the query whether caffeine may not be of service in the pain of spinal irritation (*myelasthenia*) and in general neuralgia and hay fever. Might it not be administered in small doses in inebriety, to sustain



the nervous system after the habit of drinking is broken off? (Ferris and Co's Notes on New Medicines, p. 70.)

*Guarana*.—Guarana, the fruit of the *Paullinia sorbilis*, a native of Brazil, has been extensively used as a remedy for sick-headache, and with considerable advantage in numerous instances. Writing in Dec. 1872, Dr. Wilks says, "Guarana has been introduced to our notice as a remedy for sick-headache, and here we have a very valuable addition to our Pharmacopœia. In many instances, especially those of ladies, I have had the most positive assurance given to me of the power of this drug in arresting headache, so that not the slightest doubt can be entertained of its immense value. A dose is usually taken when the headache is approaching; and if this is not quickly successful in arresting it, a second powder is swallowed; after an hour or so, if the remedy is to be useful, the headache has disappeared. I know of several cases in which the greatest enthusiasm is expressed by patients as to its merits. At the same time, I am constantly hearing of cases where it has failed. I am now trying it in smaller doses by daily administration." It has also been used with variable, but in the main good, results by Dr. Lockhart Clarke, Dr. Fraser, Aberdeen, Dr. Andrew, of St. Bartholomew's Hospital, and others. It is given in doses of ten to twenty grains of the powder, or 30 to 60 drops in the form of tincture. As it has been found occasionally to produce some degree of constipation, we (Ferris & Co.) have prepared a compound syrup of guarana, (with guarana, senna, rhubarb, and aromatics,) which will overcome this difficulty, and will be found a most elegant and efficient form in which to administer this remedy. Dose of the syrup 2 drachms. (Ferris & Co.'s Notes on New Medicines, p. 80.)

#### HEADACHE, NERVOUS EXHAUSTION, VOMITING OF PREGNANCY.

—*Bromohydric Acid*.—Dr. Milner Fotherill states as his experience of this drug, that it prevents the occurrence of headache after taking quinine. It is useful in nervous conditions, and, combined with quinine, is excellent in those cases where there is much nervous exhaustion from excessive indulgence in tea or in alcohol. It proves very serviceable in forms of excited action of the heart connected with general nervous excitability or nervous exhaustion. Given with quinine (of which it is a solvent) it gives better results than the bromide of potassium and digitalis. In all hysterical conditions connected with ovarian excitement, it seems to have all the properties of the bromide of potassium. It is equally useful in the vomiting of pregnancy, and seems to

exercise quite as powerful an influence over acts of reflex origin as does the bromide. It is especially adapted for the relief of hemorrhage associated with sexual excitement, and is even more effective here than the bromides themselves. It is also of use in whooping-cough, combining conveniently with quinine. With spirits of chloroform and syrup of squills it forms a most agreeable and palatable cough mixture. Where there is gastric irritability it is the most useful of all acids. The dose is one drachm as a full dose. (Ferris & Co.'s Notes on New Medicines, p. 67.)

**NEURALGIA.**—*Croton Chloral v. Alcohol.*—Looking upon neuralgia as a form of vascular spasm in tracts of nerves, we have a very clear idea of the reason why antispasmodics are so useful in some forms of this disease, as immediate remedies. The alcohol in port wine has, for this reason, obtained its reputation for the relief of tic. In croton chloral, and in croton chloral combined with quinine, we have an instant remedy, more effective than alcohol, and free of its reserved evil. For a year now I have successfully replaced alcohol by this new combination, for the use of which I am indebted to my good friend Dr. Elliot, of Hull. The formula is as follows: Croton chloral, gra. ij.; quinine, gra. ij.; glycerine, as much as suffices to make a pill. The pill to be taken when the attack threatens, and to be repeated every two hours until relief is obtained. (Dr. B. W. Richardson, Med. Press and Cir., Jan. 19, p. 44.)

*Facial Neuralgia.*—*Crystallised Aconite.*—As the result of many trials of this substance, Dr. A. Dumas, of the Cette Hospital, arrives at the following conclusions:—1. Duquesnel's crystallised aconitia is an energetic medicinal substance of great efficacy in facial neuralgias, especially the congestive, and in some other neuralgias *à frigore*. 2. It is useful in catarrhal affections in general, in which it may replace the different preparations of aconite. 3. It should be preferred to all other kinds of aconitia, which are ill-defined and unequal in their actions. 4. It is of little efficacy in tic-douloureux, producing only temporary sedative effects. 5. Tolerance is obtainable for it as well as for other alkaloids, when it is methodically administered. 6. It may be continued for a long time without any fear of its becoming accumulated in the system. 7. It should be given in very divided doses, with due intervals. 8. It should be given at first in small doses, these being only progressively increased. 9. Except in tic-douloureux, it should be continued only in medium doses. 10. Granules, carefully dosed up to quarter of a milligramme of the alkaloid or half a milligramme of the nitrate, should be preferred. (Medical Times and Gazette, Jan. 22.)



*Gelsemium Sempervirens*.—Dr. Sawyer says: I have frequently used the remedy for the relief of toothache and some allied affections among my out-patients. The drug seems to act mainly upon the nervous system, impairing the sensibility of the sensory nerves. The dose of the powdered root is from one to two grains; I have used a tincture, made from two ounces of coarsely powdered gelsemium root macerated in a pint of rectified spirit. In hospital out-patient practice, we meet with a large number of cases of neuralgic pains in the face and jaws, associated with carious teeth, but unconnected with any evident local inflammatory changes. The patients are frequently badly nourished women. In such cases, I have given the tincture of gelsemium, in doses of fifteen minims every six hours, in an ounce of dill-water. Out of about twenty cases, I do not think the use of the remedy has failed to be followed by decided and lasting relief in more than three or four instances. The pain did not usually disappear till after the third or fourth dose. I have seen enough of the employment of gelsemium to feel sure that more extended experience and careful investigation of its action will establish the drug as a valuable addition to our materia medica. (Ferris and Co.'s Notes on New Medicines, p. 78.)

Suffering severely from facial neuralgia last night, I took a dose (ten minims) of the fluid extract of gelsemium, U.S.P. In half an hour, being very little better, I took another dose of the same strength. In fifteen minutes after the second dose, I was so drowsy that I could scarcely keep awake. There was great pain over the frontal region—no neuralgia. The pulse was weak and intermittent. I had cold shivering and dizziness. The pupils were slightly contracted, and there was a general feeling of collapse. I took a cup of very strong tea, and in five minutes was very sick, vomiting freely, but not feeling any better. I had then given to me a glass of strong brandy and water, which was repeated in half an hour. In two hours, I was right again. The neuralgia has not reappeared. This may be of use to those who use the drug for neuralgia. I have frequently used it for others in smaller doses (four to six minims), but never gave such a large dose to begin with. I have found it very valuable in neuralgia of the face, even when due to bad teeth. (Dr. George H. H. De Wolfe, Brit. Med. Journal, Feb. 5, p. 193.)

NEURALGIA, SCIATICA, LUMBAGO, AND MUSCULAR RHEUMATISM.—*Anodyne Amyl Colloid*.—Strongly recommended as a most valuable topical application in cases of neuralgia, sciatica,

lumbago, and all muscular pains. It is prepared with hydride of amyl, aconitia, veratria, and ethereal collodion. The hydride of amyl, by its rapid volatilization, often produces immediately the desired result; but should the pain continue, the alkaloids can be brought into increased activity by applying moist spongio-piline over the collodion film. This preparation has now been in use for a sufficient time to test its value, and has in the hands of a large number of medical men given the most marked and satisfactory results in neuralgia and muscular rheumatism. (Ferris and Co.'s Notes on New Medicines, p. 69.)

**PAIN TREATED BY MECHANICAL VIBRATIONS.**—For some years past Dr. Mortimer Granville has been occupied with important researches upon the possibility of combating neuralgia by mechanical means. Proceeding largely upon theoretical considerations, he came to the conclusion that a series of interrupted mechanical shocks to a nerve would diminish its sensibility, and for that purpose invented a small instrument whereby a succession of rapid blows could be kept up upon the skin. The action of metallic applications—metallo-therapy—of which we have heard so much in the last few years, was best explained on the theory of vibrations by Vigouroux, who proceeded to experiment upon the effect of sonorous vibrations, which he thought might have a direct mechanical effect upon the sensory nerves. By the aid of a large tuning-fork and sounding-board he caused hemianæsthesia to disappear, and provoked contractions in hysterical subjects at la Salpêtrière, as rapidly as with the magnet or electricity. The pains of an ataxic were subdued when his legs were brought under the influence of these sound-waves. M. Boudet de Paris then thought this might be applied locally over a nerve—the sonorous being changed to mechanical vibrations by means of a small button attached to the resonator, and applied over the nerve. He therefore contrived a small apparatus consisting of an electrically mounted tuning-fork, the vibrations of which were transmitted to a rod which could be easily applied over a nerve. In a healthy man this mechanical excitation produced rapid local analgesia, often anæsthesia, the maximum effect being produced by application over a nerve which could be compressed on a bony surface. When placed against the skull its walls vibrate in harmony with the tuning-fork, and a sensation of approaching vertigo, frequently followed by a desire for sleep, is produced. An attack of migraine can be cut short by the application. Neuralgia—especially of the fifth, where the nerves issue from bony canals—disappears after a few minutes' application of the instrument to the nerve



at such points, but in the case of deeper-seated nerves, much protected by soft parts, it is more difficult to get good results. The writer suggests this treatment for the pains of ataxics and syphilitics; he thinks there is no limit to its applications, and suggests that perhaps cranial vibrations may induce cerebral and thus general anæsthesia. Its mechanical action is comprehensible, when we see how simple friction of the skin may soothe very acute pain. He does not regard the number of vibrations as important. This, however, is, we believe, a point on which Dr. Granville lays the greatest stress. (*Lancet*, Feb. 12, p. 266.)

**TIC DOULOUREUX, PERTUSSIS, ETC.—*Croton Chloral Hydrate*.—**

In a recent article Dr. Oscar Liebreich states that in the course of researches on the substance commonly called croton chloral, it has been ascertained that it contains two more atoms of hydrogen than was supposed, and that it is in fact butyl chloral. The practical value of butyl chloral, Dr. Liebreich says, lies in its property of diminishing sensibility before producing narcosis. He entertained the hope at first that it would be useful in tic-douloureux; but in the cases in which he has given it, he has, he says, certainly observed relief of the pain, but not an arrest or cure of the malady. The action of butyl chloral is of less duration than that of morphia; a comparison of the general effects of the two remedies indicates that butyl chloral should be preferred to morphia or combined with it. Dr. Liebreich observed the action of butyl chloral in a most marked manner in two cases of tic, in which the tenderness was so great that the patients could not bear to touch the painful parts of the face or to bring a handkerchief near their noses. A *gramme* of butyl chloral produced relief, lasting generally for two hours, each time that the dose was repeated. Regarding the mode of administration of butyl chloral, Dr. Liebreich says that at first he tried an alcoholic solution; but he has found that, after long standing, some change takes place which greatly impairs the action of the butyl chloral. He now orders it in the following form:—Butyl chloral hydrate, 5 to 10 parts; glycerine, 20 parts; distilled water, 130 parts. The mixture requires to be shaken before being used. The dose is half an ounce, followed in five minutes by a second, and in ten minutes by a third. It is well to begin with a small dose, so as to avoid producing hypnotism; that is, where the anæsthetic effect alone is desired. To produce sleep, one, two, or three *grammes* (15 to 45 grains), according to the patient's constitution, are to be given at bedtime. Butyl chloral gives relief in painful affections of the teeth; but of course a radical cure can only

be effected by attacking the cause of the disease. It should, whenever possible, be taken after meals, and be followed by a copious draught of water. Croton chloral has been found very effective in the treatment of pertussis, in one grain doses every four hours night and day. Syrup of croton chloral hydrate (Ferris & Co.) is a most reliable and efficacious preparation of the drug. Each dram contains 2 grains of croton chloral. (Ferris & Co.'s Notes on New Medicines, p. 74.)

---

#### AFFECTIONS OF THE CIRCULATORY SYSTEM.

**ANÆMIA.**—Of all remedies iron maintains, as it always has maintained, a pre-eminence in the treatment of anæmia. It seems to act directly upon the blood-forming viscera, and probably also upon the digestive organs—*i.e.*, on the gastrointestinal tract. No wholly satisfactory explanation has, I believe, been given of the mode of action of the iron in either of these directions, or of the reason why the best results in the most marked cases of chlorosis are obtained by the administration of heroic doses far in excess of what is actually required in blood formation, and much more also than is actually absorbed. Next to iron, and in some forms of anæmia to be preferred to it, is *arsenic*. This metal is a powerful hæmatinic. It acts on the tissues as well as on the blood and blood-forming organs; and its effect upon the cutaneous epithelium has been actually demonstrated. It is almost the only drug which has been successful in the treatment of severe idiopathic anæmia—which more often resists all medication. (Dr. Sidney Coupland, p. 301.)

**ANEURISM.**—*Galvano-Puncture.*—Stohrer's battery of forty cells was used as the source of electricity. To the negative electrode two needles were attached by separate wires provided with clamps, allowing of the ready connection and disconnection of the needles. The needles were such as are used in harelip operations. They were thickly sheathed to within three-quarters of an inch of their points with sealing-wax carefully polished. One was thrust in near the axillary border of the tumour, the other on the sternal side, two and a half inches distant, on the same level. The circuit was completed by bringing into contact with the skin over the tumour a moistened sponge connected by wire with the positive electrode. Six cells were used at first, and the sponge was applied at the upper border of the tumour, equidistant from the two needles. At the end of 3 minutes the patient complained of "pricking" at the punctures and "inside." At 5 minutes the "pricking" continued; ten cells were used. At  $9\frac{1}{2}$  minutes the sensations had become of a "burning" character. At 10 minutes



the sponge was shifted to the external side of the tumour, and twelve cells were turned on. The needles had hitherto both moved freely with respiration and pulsation, but now the movement of the sternal needle decreased a great deal. At 20 minutes, the sponge being moved to the axillary border, the axillary needle moved less freely, the sternal more freely. At 30 minutes the sponge was moved to the hepatic border, and twenty cells turned on. This caused so much distress in the way of burning pain that the number was reduced to eighteen. Soon afterwards the discomfort at the punctures decreased and almost disappeared, the sponge, on the other hand, giving rise to much complaint. (Dr. W. M. Ord, p. 180.)

ANGINA PECTORIS.—*Nitrite of Amyl*.—Foremost among all our modern appliances for the relief of this dreadful breast pang we must place the nitrite of amyl; it is perfectly safe, and may be entrusted to the patient with the certainty that he will not injure himself by its use; in all slighter attacks it serves to give perfect relief, and in more severe paroxysms it alleviates even when it cannot completely remove the pain. The relief to the pain of angina is obtained, not from lowering of the blood-pressure, but from the action of a volatile narcotic, which gradually escapes from the amyl when kept, unless it is enclosed in hermetically sealed glass capsules. As these are now readily obtained, we possess a remedy which can be safely entrusted to the patient, and which is certain to give relief in all ordinary attacks. (p. 64.)

*Chloroform, and Subcutaneous Injection of Morphia*.—When the attack is a severe one, the amyl fails to give relief, however freshly it may have been prepared. Then our only resource lies in chloroform, which can only exceptionally be entrusted to the patient, but ought always, if possible, to be given by a medical man. It must be given freely, so as completely to narcotize the patient; and, when so given, I myself have not yet seen any case which was not relieved, though I have seen several in which the relief was not permanent enough to place the patient in safety. In these cases I have had recourse to the subcutaneous injection of morphia, using by preference Squire's solution of the bimeconate, of which I have injected half a drachm into each arm, without removing the clothes or in any way disturbing the patient. This, as yet, has never failed me: the chloroform sleep has passed into the morphia sleep, from which the patient has woke up some hours subsequently, free from pain, but exhausted. Sulphuric ether has long been used with a similar intent; it is an admirable narcotic, and the chief objection to its use is

that it is not rapid enough, taking always some minutes to bring the patient fully under its influence. Chloroform acts more quickly, even more effectually, and is perfectly safe. It is not always necessary for the medical man to administer it, though in some cases it is so. All that we require is to insure that the patient shall only have a moderate dose of chloroform, and this we manage by giving him a chloroform smelling bottle, the fluid being poured over a piece of sponge, so that it cannot spill; this smelling-bottle he is told to hold to his nose, and to breathe as deeply as possible. In this way relief is obtained in a few seconds, and so soon as the narcotic influence is produced the smelling bottle drops, and with it rolls away all risk of any overdose. (Dr. George W. Balfour, p. 65.)

*Subcutaneous Injection of Morphia.*—No medical discovery in recent years has received a more marked and more just attention than that made by Dr. Lauder Brunton as to the power of nitrite of amyl to relieve angina pectoris. Dr. Lauder Brunton observed that in cases of angina pectoris the tension in the arteries is very high, and that nitrite of amyl, by relaxing the small arteries, reduces the tension and relieves the suffering. But whilst the benefit thus obtained in some cases of angina pectoris is most satisfactory, in other cases it is so utterly wanting that there must be some differences in the cause of the pain corresponding to so great a difference in the effects of the remedy. It would appear clear that there are two distinct kinds of angina pectoris, one of which is a result of tenderness and overstrain of the great vessels. In this kind of pain high tension in the arteries is a factor, although a morbidly sensitive state of the nerves must at the same time be present. Such pain corresponds to pain and tenderness in the teeth during mastication, and it is lessened by whatever will lessen the strain upon the tender parts; so that amyl nitrite, or less certainly nitro-glycerine, will bring welcome relief, even when it does not give entire comfort. But the relief thus afforded is apt to be temporary and often only partial. So that even in these cases we have to bring in other means, and supplement the service which the amyl renders in relieving the strain upon the vessel by such further service as morphia can render by reducing general sensitiveness. A second form of angina pectoris is a kind of neuralgic heartache, arising from actual inclusion of a cardiac nerve in the inflammatory decay of an artery, and no signs of high tension in the vessels are present. This disease corresponds with such neuralgic toothache as arises when a branch of the dental nerve is involved in



inflammatory decay of a tooth. It is more paroxysmal and violent than the first form, the intervals are more free, and there are usually no signs of disease of the heart or great vessels. The means of relief are those which are found useful in the similar neuralgia of the face, and lead us first to reduce morbid sensitiveness by such improvement of tone in the general health as may be possible; second, to employ such alterative drugs as, like arsenic and quinine, have proved themselves to possess some power of controlling the tendency to neuralgic pain; and, third and chiefly, the use of sufficient quantities of morphia to afford relief in the attacks. Morphia, given in the form of subcutaneous injection, will produce the most satisfactory result in the way of temporary relief of this form of angina pectoris. But angina pectoris does not always arise from organic changes in the heart or arteries. For, like facial neuralgia, it may occur secondarily as a reflected pain whose source is at a distance. The primary disturbance which gives rise to reflex angina pectoris is usually seated in the course of the pneumogastric nerves. (Dr. Walter Moxon, *Lancet*, April 30, p. 685.)

NÆVUS.—*Ethylate of Sodium*.—The result of my experimental inquiry is to indicate that in the ethylates of sodium or potassium we have a substance which, brought into contact with colloidal tissue, would be decomposed into an active caustic in the nascent state, and into alcohol which, in the same state and at the same time, became an antiseptic, a styptic, and a pectiniser, or producer of coagulation. The facts ultimately led me to think of applying the ethylates to living tissues as a method for removing vascular growths. I reasoned that when an ethylate was applied to a vascular growth the metal—sodium or potassium—would be oxidised and become a powerful caustic, while at the same time the alcohol that was reformed would fix the destroyed matter and the blood by the process of coagulation, and would at the same time prevent decomposition. In a case of nævus of the scalp in a child, the treatment commenced in the usual way by the application of the ethylate over the growth, by means of the glass-rod. The nævus was small, not larger than a fair-sized hazel nut. The first application caused a dense scale to form, which was loose and removable on the fifth day. The ethylate was then reapplied, and five days later, when the new scale was removed, the nævus was reduced to the size of a small bean. It remained in this state during three further applications of the ethylate, being much longer under treatment than I had expected after the second application. On the seventh application it was nearly removed, and one additional touch a fortnight later

completely removed it. No constitutional symptoms interfered with the course of the treatment, and no scar remained. With patient care in its employment, sodium ethylate may be accepted as a most effective remedy for the ordinary form of *nævus*. (Dr. B. W. Richardson, p. 187.)

RESTORATION OF THE HEART'S ACTION WHEN IT HAS CEASED TO BEAT.—In the *British Medical Journal*, Dr. Jago suggests that when the heart fails in cases of anæsthesia, &c., we should prick it with a fine long needle, but gives no cases. The following cases by Dr. Reid are interesting. He says: On reading Dr. Jago's article, it reminded me of an experiment in my college days. I do not remember what induced me to kill a mouse by a blow on the head, and rip it open to see the heart beat. It did not. I pricked it with a needle, and set it a-going. It stopped after a time; then I gave it a second prick, and a few pulsations were distinctly seen. When I was in petticoats, my father was sent for to a girl in a fit. He was out; and, when he came home, was informed of the fact. "How long since? and any second message?" Being told, he thought he need not go. My mother suggested he "ought to go," which he did. He found the girl dressed in her grave-clothes, and "laid out" on a linen-covered table. He examined her, and found some warmth over the heart. He ordered hot water to be brought, not scalding hot, and poured it into a jug, tore her shroud open, stood on a chair, and poured a continuous stream of hot water, until the throbbings of the heart were distinctly seen. That girl was the mother of several children before I left Scotland, in 1848. My mother used to laugh, and take her share of the credit of her restoration to life. An old man here, Robert Robinson, several years before his death, took a fit, and apparently expired on the floor, where he was lying, pulseless and breathless. The heart had ceased to beat; and I was told that "he was beyond any doctor's power now." I felt some warmth over the heart, and tried my father's remedy; and, to the wonder of spectators, the septuagenarian revived, and lived several years afterwards. Hot water can easily be obtained; and no one can object to such an experiment. (Dr. J. C. Reid, *Brit. Med. Jour.*, Dec. 25, p. 1014.)

#### AFFECTIONS OF THE RESPIRATORY SYSTEM.

ALCOHOL AS AN ANTI-SPASMODIC.—SPASMODIC ASTHMA.—Alcohol relaxes. It relaxes the arterial vessels to their extremest subdivisions: it relaxes muscles until they fail to respond to their nervous stimulus. "Helplessly drunk" is the common phrase employed to designate the man or woman



who is paralysed by alcohol. Alcohol relaxes the organic muscular fibre so completely that the relaxation induced by it extends even after death. I was led almost immediately after my first experiments with amyl nitrite in 1860-2, to put alcohol and the nitrite in the same position as relaxing chemical agents on organic and voluntary muscular fibre. Thus, therapeutically, alcohol came under the old head of an anti-spasmodic, and it is as such that I have since more carefully studied its clinical value. In making this explanation I do not wish to assume that alcohol is of no other medicinal use than as an antispasmodic. It is an antiseptic. It reduces the animal temperature, and in that respect may be considered a febrifuge. It coagulates blood and albuminous fluids, and in that sense may be called a styptic. Its values in all these directions are different and, perhaps in all, comparatively little when tested by the side of other agents; but I leave these considerations to keep to the great one,—its service as an antispasmodic. In this regard ethylic alcohol holds a place peculiar to itself. It acts very much more slowly than amyl nitrite, ethylic ether, or methylic alcohol. For that same reason the relaxing action is much longer held on. Thus, in sharp spasm, such as that of angina, colic, tetanus, asthma, the action of amyl nitrite is quick, determinate, and at the same time evanescent, while the action of alcohol is too slow to effect relief in any such space of time as would prove to be useful during emergency. What is more, the quantity of alcohol that is required to produce a relaxing effect in such cases is so great that other evils are apt to arise from the complication. It is scarcely correct, therefore, to say that alcohol is a good antispasmodic in cases of acute, tonic, or tetanic spasm. But in such cases it becomes a convenient and compatible vehicle for the more active direct antispasmodics, and as such I frequently prescribe it. Thus, in pure spasmodic asthma, I commonly order for an adult the following mixture:—Amyl nitrite, ℥iij.; alcohol, sp. gr. .830, ℥ss.; distilled water, ℥jss. To make a draught. This, with more water added to it, to render the dose agreeable to the taste, is very rapid in its action. I have at the present time a patient suffering from spasmodic asthma, who for two years past has always carried this compound with him. He has invariably some preliminary indications of an acute attack in the form of constriction across the chest, rapid and strong action of the heart, and coldness of the hands and feet. Before he took the remedy above named he found more relief from a sharp walk, or even a run, than from any other course of treatment, and he sometimes could stave off an attack by this plan. Now he at once takes his draught in cold water—ice-

water if he can get it—drinking it slowly, and he so certainly obtains the desired relief, that for fifteen months he has not had one continued attack. In this instance the alcohol keeps up the action of the nitrite, and this mode of administration contrasts well with the mode of administration, I originally suggested, by inhalation. He first was treated by inhalation of the nitrite, and so obtained relief, but it was a temporary relief only and not comparable in result to the present method. In this instance the sufferer is a total abstainer from alcoholic beverages, for which reason so small a dose of alcoholic as half a fluid ounce suffices, often without repetition, to keep up the relaxation. He is, however, instructed to repeat the dose every half-hour for three times, if relief should not follow at once. A few times he has been obliged to take a second portion. Alcohol is a good agent to administer just before the administration of those anæsthetics which produce contraction of arterial fibre and convulsive spasm. This action belongs to all the members of the chlorine anæsthetic family, to chloroform singularly, and is no doubt, as I have pointed out over and over again, the chief cause of danger from them. To give a dose of alcohol therefore, a dose sufficient to produce a demonstrable physiological effect, before administering chloroform, is sound physiological practice; and I attribute much of the success which attended the administration of chloroform in my hands to this detail. I noticed so often that a full dose of alcohol lessened the duration and intensity of the second or convulsive stage of chloroform, that I invariably gave a full dose before beginning to apply the inhaler. (Dr. B. W. Richardson, Med. Press and Circular, Jan. 5, p. 2.)

ANGINA, SPASMODIC ASTHMA, AND CHLOROFORM POISONING.—*Nitrite of Amyl*.—Used as an inhalant in angina pectoris, spasmodic asthma, etc. Five drops should be poured upon a piece of lint, and held close to the nostrils for ten or twenty seconds. On September 21, 1876, Dr. F. A. Burrall read a paper at the New York Academy of Medicine, in which he brought it forward as the most available of all medical agents to avert the dangerous influence of chloroform when used as an anæsthetic. It was believed that nitrite of amyl acted as an antidote to chloroform by producing a direct paralysis of the vascular walls, hence causing a rapid circulation. He recapitulated the experiments performed upon cats and dogs by others and himself, and said that amyl should always be in the armamentarium of the medical man. It could be administered from a bottle, or five or six drops might be placed on a handkerchief and held to the nose and mouth of the patient. (Ferris and Co.'s Notes.)



ASTHMA.—*Ethyl Iodide*.—Prof. Sée has employed inhalations of this substance in five cases of asthma, and the paroxysm was arrested in all very rapidly. In three cases of cardiac dyspnoea it also acted favourably; and in two cases of chronic bronchitis, accompanied by dyspnoea, the effect, although much less prompt, was advantageous. Quite recently, in a case of œdematous laryngitis, inhalations repeated ten or twelve times a day effected a cure. Like the iodide of potassium, the iodide of ethyl increases the bronchial secretion, and by this hyper-secretion renders it more fluid, and thus favours the admission of air into the pulmonary alveoli. The iodine stimulates the action of the respiratory centre, and by reason of the greater quantity of blood this is brought into contact with, respiration becomes more easy, being still further aided by the ether in combination with the iodine. The general conclusions to be drawn from the paper are—1. Iodide of potassium constitutes the most certain means of curing asthma, whatever its origin may be. 2. The iodide of ethyl relieves the paroxysms of asthmatic dyspnoea with great rapidity. It also appears to act advantageously in cardiac and even in laryngeal dyspnoea. (Ferris and Co.'s Notes on New Medicines, p. 76.)

*Drug Smoking*.—Dr. Reginald E. Thompson, in the Practitioner, advocates the above plan of administering many drugs. A standard paper is formed by saturating Swedish filtering paper in a solution of nitrate of potash, with tincture of tobacco and oil of aniseed to destroy the unpleasant odour of burnt paper. Swedish filtering paper, size 4 ins.  $\times$   $2\frac{1}{2}$  ins.; potassæ nitratis, gr.  $\frac{1}{4}$ ; tinct. tabac., ℥x (made with  $2\frac{1}{2}$  oz. of leaf to a pint of spirit); ol. anisi, ℥ $\frac{1}{8}$ . A solution of any drug desired is used to saturate the paper, and so the dose can be exactly regulated; the tobacco not causing any appreciable effect on the system. Opium was the drug used, which, in doses of the 1-64th of a grain, was found sufficient to begin with. In this small dose great relief was obtained in the harassing cough of phthisis, in the dysphagia accompanying ulceration of the larynx, in undeveloped forms of asthma, and also in the dyspnoea of asthma. The formula suggested by Dr. Thompson Messrs. Ferris find by experience may be considerably improved. They have accordingly modified the formula and produced cigarettes which are *pleasant in use* and contain definite proportions of the active remedies—viz., Opium cigarettes; Stramonium cigarettes; Stramonium and Belladonna cigarettes; Datura Tatula cigarettes; and Datura Tatula and Opium cigarettes. (Ferris and Co.'s Notes on New Medicines, p. 74.)

**EMPHYEMA.**—The cavity of an empyema is an abscess cavity, and as such should be drained of its contents. Its walls also should be approximated in order to obtain if possible that secondary union by granulation which the surgeon attempts to obtain in limbs by pressure and careful bandaging. The contents of an empyema should be kept aseptic and the absorption of septic material prevented. Lastly, an empyema should be irrigated in order to wash away stagnant secretions. I am hopeful that these essentials of treatment will be gained by the process to be described. Whilst dressing a patient I was one day disappointed to find how much pus had accumulated in the pleural cavity on removal of the antiseptic dressings, and I determined to attempt to drain the cavity by placing the patient on the affected side with the wound lowest, at the same time inserting one end of a gutta-percha tube (eighteen inches long and a quarter of an inch in diameter) just within the cavity, and allowing the remainder of the tube to hang vertically downwards through a hole in the mattress, placing the opposite end in a jar of carbolic lotion. I should add that I attached the tube to the side by means of tapes carried round the body. My object was, of course, to prevent the entrance of air into the pleural cavity, and at the same time to drain the contents of the sac by gravitation. After watching the arrangement for some time, I was surprised to find the level of the fluid in the jar sinking during inspiration, and again rising during expiration; and upon closely watching the continuity of the tube, I found it straighten itself somewhat at every inspiration. The fluid was, in fact, rising and falling during inspiration and expiration respectively. I next placed a piece of glass tubing in the continuity of the tube, near the chest-wall, and replaced the carbolic with Condyl's fluid in the jar. I was at once gratified by seeing the pink Condyl rushing up and down the pipe at every respiration. Now replacing the jar by a graduated measure, I found that something less than half an ounce of fluid was drawn up at every normal inspiration, and four ounces at every deep inspiration; the same quantities were ejected with corresponding expirations. We have, then, a method of irrigation of the chest whereby the interior of an empyema is bathed at every respiration—a method which is constant, automatic, and to a certain extent under the control of the patient. (Mr. C. McIlvor Goyder, p. 98.)

**NASAL POLYPUS.**—*Ethylate of Sodium.*—I have used the ethylate three times with remarkable success in the treatment of nasal polypus. In two of these cases the polypus was small, easily discernible, and readily within reach. The ethylate was



applied to the pedicle of the polypus from a probe point of cotton-wool held in the blades of a long pointed curved forceps, and in both instances the growth was destroyed during the application, and was removed by after blowing of the nose, the one application sufficing to effect a cure. (Dr. B. W. Richardson, p. 192.)

**PHTHISIS.**—*A Naso-Oral Antiseptic Respirator.*—The beneficial results following the use of antiseptics in phthisis have been long noted. My therapeutical experience leads me to believe that, as shown by Matthews Duncan to be the case in some examples of puerperal fever, it is more frequently a condition of sapræmia than pyæmia which obtains in phthisis—that the toxæmia is rather attributable to the chemical factors which putrefaction engenders than to the presence of micrococci in the tissues and blood. I therefore think that it is only by the local application of the antiseptic that good results can be obtained. In applying this principle to practice, I have for the last year and a half been in the habit of using what might be called a naso-oral antiseptic respirator—i.e. a respirator which covers both the mouth and nose, and contains a volatile antiseptic, which is drawn into the lungs with each inspiration. This respirator is provided with inspiratory and expiratory valves, is not liable to get out of order, and is easily worn. In the first of the two cases related pure creosote was used on the respirator and in the second equal quantities of creosote and carbolic acid. The respirator can be procured from Mr. Gardner, South Bridge, Edinburgh. (Dr. G. H. Mackenzie, p. 82.)

*Arrest of Cough in Phthisis.*—Dr. Landouzy, after describing the suffering which the subjects of phthisis undergo from the paroxysmal cough to which on the slightest occasions they are liable, and the mischievousness and inutility of the means usually tried without avail to arrest these, states that a considerable experience enables him to rely upon an easy, rapid, and inoffensive procedure for arresting this distressing occurrence. It consists merely of a subcutaneous injection of a syringe-ful of distilled water, to which a few drops of cherry-laurel water have been added. The injection is made in the subclavicular or cervical region, and it is the more certain and durable in its operation the nearer it is thrown in to the points where the patients complain most of the sensation of irritation and tearing which constitutes the first link of the reflex chain that ends in the cough. Thus, in laryngeal phthisis, the effect is greatest when the injection is made at the sides of the larynx; as it is in circumscribed pleurisy or bronchitis at the apex, when inserted into the



painful or tender intercostal spaces. It is rare under such treatment for the cough not to be cut short at once, however violent, intense, and obstinate it may have proved to be. The respite is usually a prolonged one, especially if the patient do not become too soon accustomed to the use of the remedy. A great deal is done if the distressing morning and evening paroxysms can be thus prevented. Mere distilled water would suffice, but a few drops of the laurel-water should be added in order to deceive the patient for his own good; and for the same reason it is well to call the injection a solution of bioxide of hydrogen. This addition causes a little temporary irritation on injection, which also favourably impresses the patient. (Medical Times and Gazette, Jan. 15, p. 64.)

TRACHEOTOMY.—An interesting detail in performing tracheotomy is the exact seat of election for the opening in the windpipe. In books we have a tradition handed down informing us that the windpipe may be opened either *above or below* the isthmus of the thyroid gland; and hemorrhage is alluded to as an event to be dreaded if the isthmus be cut, but some of the best authorities (Erichsen, Bryant, and others), while still advising us to leave the isthmus alone if possible, say that it may be cut without scruple when necessary. And it is not difficult to understand why this should be done; for in the isthmus in the middle line there are no blood-vessels, just as in the tongue or in the perineum the middle line is devoid of vessels of more than capillary size. Hyrtl failed to inject the one side of the thyroid from the other through the isthmus. It is quite true, indeed, that the thyroid arteries, ramifying outside the capsule of the thyroid body send small branches across the trachea to anastomose with those of the opposite side, but these vessels are quite outside of the isthmus, and do not belong to it. In many cases, especially in young children, and people with short necks, the space between the cricoid and the isthmus is so very small that no tube could be got in without dislodging the isthmus or incising the cricoid, and as a matter of fact, I believe the isthmus is often cut unawares in children. But in the fear of the isthmus, which young and even more experienced surgeons are imbued with, serious mistakes are made. I have been called twice to make *post-mortem* examinations of children dying of diphtheria, in whom the so-called high operation has been done by surgeons who certainly could not be called quite inexperienced. In one of these cases the tube was pushed into the larynx at the base of the epiglottis; and in the other it had gone into the pouch of Morgagni. On the other hand, by going too low

down, we come into serious dangers. The thick plexus of thyroid veins; the occasional thyroidea ima; and even the innominate itself may give trouble: while the bulky thymus in children, though not dangerous to cut, comes more or less in the way. It occurred to me, therefore, after doing one or two tracheotomies, and after carefully dissecting the parts in a number of bodies at various ages, both injected and uninjected, to *select the isthmus* as the safest seat of the incision. To this I was the more impelled by watching the results of cutting the cricoid cartilage. It does not answer to cut the cricoid, for there is so much spring in the ring of the cricoid that the tube cannot be worn without a constant irritation, it may be unfelt, but steadily leading to perichondritis and necrosis of parts of the cartilage. Twice I have tried to obviate this by *removing* a piece of the cricoid in cases where it was intended to wear the tube permanently: and this proved very successful. But, in merely splitting the cricoid, the result is not good if a tube is to be worn even for a week or two. In another case, that of a female, æt. 34, with acute infraglottic œdema, under the care of Dr. Sloan, I performed the low operation, but during it I had so much profuse hemorrhage from the thyroid plexus of veins that I resolved to go higher up, and incised through the isthmus, with the best results. In the last five or six cases I have cut through the isthmus, with the knife, and have had reason to be well satisfied with the easy access to the trachea and absence of hemorrhage during the operation. Any hemorrhage which is met with at this part of the air tube is from small arterial vessels which are readily secured by ligature or pressure forceps, and that gushing of blood from large and swollen veins in the thyroid plexus is avoided. The trachea is near the surface, and we have the useful guide of the firm resistant ring of the cricoid at the upper end of our incision. which, in very young children especially, is of considerable value. (Dr. D. Foulis, p. 171.)

---

#### AFFECTIONS OF THE DIGESTIVE SYSTEM.

CATARRH OF THE STOMACH IN CHILDREN.—The acrid mucus, a free secretion of which is one of the ordinary phenomena of the catarrhal state, is a constant cause of fermentation and acidity. It very quickly induces an acid change in the more fermentable articles of food. Therefore, if the stomach be oppressed by sour matters, shown by uneasiness at the epigastrium, or sour smell from the breath, and a feeling of nausea, immediate benefit will be derived from an emetic dose



of ipecacuanha wine. Afterwards a draught, composed of tincture of nux vomica, with bicarbonate of soda, in water sweetened with spirits of chloroform, taken two or three times in the day, will soon restore the gastric mucous membrane to a healthy condition. Strong purgatives are to be avoided, but as there is usually constipation in these cases, an occasional mild aperient will be required, such as compound liquorice powder or castor oil. If there be fever, which does not subside after the action of the emetic, the child may be allowed to take fluids from time to time in moderate quantities. The best are unsweetened barley-water, flavoured, if desired, with orange-flower; toast-water, or fresh whey. During the treatment, as long as any signs of acidity of stomach persist, care should be taken to exclude from the diet all matters capable of favoring the tendency to fermentation of food; and even for some time afterwards, readily fermentable substances, such as starches and sweets, should be taken sparingly, lest the derangement be encouraged to return. (Dr. Eustace Smith, p. 103.)

FISTULA-IN-ANO.—Mr. Gay, Surgeon to the Great Northern Hospital, objects to *early* operations in these cases, and to the use of any other instrument than the knife or sharp scissors; and thinks that, as a rule, they ought not to be resorted to until the walls of the abscess, and as well as of the consequent fistulous track, have assumed a condition of health and a *disposition* to take on a healing process. Unless such a disposition exists in these parts, the division of the sphincter should not be attempted. It is clear, on reflection, that the *conditions* which *forbid* the healing of such a fistula do not include an *indisposition* on the part of the tissues in which it lies to healthy and reparative activity. These relate simply to the form, it might be, of the sore (the special fistulous track-surface), to the patient's general health, or it may be to the deterrent influences of sphincter activity. At all events, these do not extend to and include the action of the tissues in which the sore is situated. These must be in a sanitary state, and disposed to heal on being released from the operation of those conditions which interpose to prevent their healing, or an operation might be useless. The fistula should be dry, and not unctuous with purulent discharge. Hence Mr. Gay, in these cases, recommends operation being deferred, as a rule, until the sac of the abscess has filled in, and nothing is left but the mere sinuous passage. Operations done before this stage has been reached are those most likely to be followed with faecal incontinence, and this is readily explained by the amount of reparative action that, in the great majority of cases, is required before the parts are in a condition to resume

healthy action, embracing a period which is partly occupied by tissue degradation and destruction, preliminary to that of repair, and perchance in part by processes which do not favour that kind of ultimate reunion of the divided textures, including the sphincters, which can alone ensure the restoration of their natural functions. (Mr. John Gay, *Lancet*, Dec. 11, p. 936.)

**FLATULENCE.**—If we can put our finger on the cause and remove it, we shall be far advanced in the treatment. We must find out whether the patient is in the habit of drinking much tea or large quantities of hot fluids, and if so we must considerably reduce the supply. The use of tea has a marked effect in aggravating the distension and discomfort, so much so that where the tendency to this state of bowel is strong, tea taken in any quantity will be almost certain to bring on an attack of pain. Patients have sometimes found this out or themselves, and have given up the use of tea. We must limit the diet to simple easily digested food, given in three or four small meals a day. We must exclude tea, coffee, malt liquors, and strong wines, also raw vegetables, pastry, sweets, and ices. The quantity of liquid taken with food should also be limited to one breakfast-cup or less with breakfast, half a pint in the middle of the day, and the same quantity with the evening meal. With the two latter we may allow in the water either a glass of claret or of dry sherry, or a half glass of spirit. If there is much tendency to constipation the simple remedy of a half tumblerful of fresh cold water, sipped the first thing in the morning and the last thing at night, will often aid the action of the bowels, and it seems to supply at a time when it does no harm the quantity of fluid required by the system. A daily natural action of the bowels should, if possible, be obtained, and this may often be gained by enforcing the habit of soliciting their action at a fixed time every day. Cold or tepid sponging followed by vigorous friction will also be useful. As far as drugs are concerned, the treatment is very much what we should adopt in ordinary colic and dyspepsia, at the different stages of these two affections. We should probably have recourse to the good old-fashioned mixture of soda and gentian with aromatic spirits of ammonia, or to bicarbonate of potash with tincture of *nux vomica* and infusion of *calumba*, given twice or thrice daily, two hours after food. Sometimes ten drops of the tincture of *nux vomica* in a little water, three times a day, will answer well. Following this, we may give a pill of reduced iron with pepsin and extract of *nux vomica* and of *belladonna* with food twice daily. (Dr. R. W. Burnet, p. 108.)



**HEMORRHOIDS AND PROLAPSUS.**—*A Serrated and Cutting Caute-ry.*—During the last year I have reverted to a method somewhat similar to that adopted originally by the late Mr. Cusack of Dublin, and instead of using the scissors for the purpose of removing the growths, I have employed cauteries so constructed that when heated they either cut through the tissues or saw them through at the same time that thorough cauterisation is effected. Mr. Matthews, at my desire, has furnished me with instruments having either a cutting edge or a serrated edge (see woodcut, p. 207). The blades are set at right angles to the shaft or nearly parallel with it, according to the fancy of the operator. I employ both the cutting and the serrated caute-ry, according to the nature of the case. If the tumour or tumours to be removed are very large and muscular, I use the latter, as the tissues are divided more slowly, and the cauterisation is more thorough; when the tumours are smaller and less vascular I use the cutting caute-ry. (Prof. Henry Smith, p. 207.)

**HERNIA.**—*Radical Treatment.*—The operation which I advocate and practice is to expose the neck and upper portion of the sac by a free incision, to make a small opening into the sac, to carefully return the contents, and divide adhesions, to separate the sac from its attachments to surrounding textures, to draw down the sac and apply a catgut ligature round its neck as high up as possible, to cut away the sac immediately below the ligature, and then to stitch together with a continuous catgut suture the margins of the abdominal opening, the stump of the ligatured neck, and the surrounding cellular tissue. The whole operation and the after treatment are performed under strict Listerian antiseptic principles. One advantage of this method is that it is applicable, with perhaps some little modification, to all the varieties and all the conditions of hernia, with very few exceptions. (Prof. T. Annandale, p. 198.)

*Immediate Cure of Inguinal Hernia by a New Instrument.*—The instruments required are very simple—a thin strong knife, like a tenotomy knife, for separating the skin from the subjacent tissues; and the screw instrument, shaped like a corkscrew, with a flat point and movable handle, nickel-plated. The screw is made rather broader near the point, tapering somewhat towards the handle, and should be sufficiently strong not to break, but yet as thin as may be consistent with strength. The mode of performing the operation in a case of ordinary oblique inguinal hernia is as follows. The patient must be in good health, have an aperient the day before, and an enema on the morning of

the operation. If necessary, the pubes must be shaved. Under the influence of an anæsthetic, the hernia is carefully reduced, and not allowed to come down during the operation. An incision is made in the skin of the scrotum large enough to admit the forefinger easily, over the fundus of the hernial sac, generally about two inches below the spine of the os pubis; and the skin is separated from the parts beneath by means of the blade or handle of a narrow scalpel, to an extent determined by the size of the hernia, and that of the inguinal canal. The operator standing on the left-hand side of the patient, the forefinger of the left hand is passed up to the internal abdominal ring, invaginating the fascia and hernial sac to the same extent. A careful examination is now made of the surrounding structures, the position of the vessels clearly made out, the size and shape of the abdominal rings noted, as well as the length of the canal. This is necessary, in order to have an instrument of the proper size. The left forefinger being retained in the hernial canal, protecting the spermatic cord, and at the same time closing the internal ring, the screw instrument, previously dipped in carbolic oil, is, with the right hand, thrust through the skin of the groin so as to transfix the aponeurosis of the external oblique muscle, at a point somewhat above that at which it is intended to pass through the conjoined tendon. Having given the instrument one half-turn to the right, if a right inguinal, and a whole turn if it be a left hernia, it is next made to pierce subcutaneously the conjoined tendon of the internal oblique and transversalis muscles as high up as can safely be reached, the left forefinger carefully guarding the point, so as to avoid wounding the vessels or peritoneum. This part of the operation must be executed cautiously and deliberately. It will be then found that, as soon as a hold has been secured by the instruments, the internal ring is practically closed. Another turn is now given to the screw, causing it to pass through the invaginated tissue—whether consisting of fascia or sac, or both—and it is again passed through the external pillar, and then across to the internal pillar of the external ring, and another turn given if possible, so as to bring the point out at the wound in the scrotum. The handle should then lie flatwise on the abdomen, and the point of the instrument be protected by a round piece of solid India-rubber, or by winding round it some carbolised gauze. A light pad is then placed over the part, and a bandage carefully applied. The operation may be performed under Lister's antiseptic method, but it is well then to leave the instrument *in situ* rather longer. The results are equally satisfactory, and there is, of course, less danger from any septic influence. (Mr. W. D. Spanton, p. 204.)



## AFFECTIONS OF THE BONES, JOINTS, ETC.

ANTISEPTIC SURGERY.—*Practice under Prof. Esmarch.*—The most noticeable feature is the success achieved by Professor Esmarch under the system of infrequent antiseptic dressing, it being a by no means uncommon event for the first application to be left undisturbed for a month, and thus one of the objections to the antiseptic method, viz., its expense, is removed. In all cases the temperature is carefully watched, and the exterior of the dressings examined daily. On the slightest sign of discharge soaking through, or serious rise of temperature, the dressing is removed and re-applied. The temperature of the patient is, as a rule, taken in the rectum, and hence some deduction must be made in comparing these cases with those in which it is taken in the axilla. The antiseptic method of Lister, or a modification of it, is, wherever practicable, employed. In place of antiseptic gauze, large pads of carbolised jute (enclosed in antiseptic gauze), or of carbolised hydrophil cotton, which readily absorbs discharge, are used, with carbolised varnished paper over all, and starched gauze bandages: protective is not used. The bone drainage tubes invented by Prof. Esmarch's senior assistant, Dr. Neuber, are extensively used; and, indeed, without some such self-removing drain, the dressings could not, in resection and other cases, be left untouched for so long a time as they are left with its help. The tube is kept in its place by being simply transfixed at its outer end with a common safety pin; and when, after two or three weeks, the first dressings are removed, these pins are usually all that remains to show where the decalcified bone tube has been. The tubes, as used here, are quite soft and flexible, not brittle. The solution of carbolic acid used for the spray is of the strength of one in forty, and it is not thought necessary to have the sprays playing immediately on the wound, but this latter is thoroughly and often washed out with carbolic acid lotion; and in the operating theatre, which is exceptionally well fitted up, two powerful sprays, worked by compressed air, conducted in pipes from the engine-house, are kept going, throwing the pulverised carbolic acid solution over the table and above the heads of the operators. (Dr. E. Muirhead Little, p. 124.)

ANTISEPTIC DRESSINGS.—*Salicylic Cotton Wool Dressing.*—Instead of the prepared gauze I have used a layer of cotton wool impregnated with salicylic acid as a dressing for operation wounds, in the hope of getting rid of the irritation caused by the former material, and of simplifying, if possible, the somewhat complex details of antiseptic dressing.

The operation having been performed under the spray, &c., the lips of the wound have been either painted with carbolic oil or covered with a strip of protective, and then the whole region has been covered with the prepared wool, a drainage tube being so arranged as to allow of the free escape of discharges into it. For the purpose of securing asepsis an extremely thin layer of the wool seems to be sufficient; but as the discharges may become septic as soon as they have soaked through to the outside of the dressing, it has been found necessary to use a layer of sufficient thickness to ensure that this shall not occur in the intervals between the dressings of the wounds. (Mr. Walter Pye, p. 144.)

*Salicylic Silk Dressing.*—When a wound of considerable size is dressed antiseptically in the usual manner with carbolic gauze, the dressing must of necessity be changed several times during the first week. If this is not done, the serous discharge, which exudes in large quantity, soaks to the outside. Putrefactive changes ensue, and the case, as it is generally called, “breaks down.” If, then, we can use as a dressing some material which will not require to be renewed except at long intervals, we not only increase the patient’s chance of a speedy recovery, but lessen very considerably the work and expense of the surgeon. Such a material is, I think, found in salicylic silk. The silk used is the article called in the trade “silk noils.” These noils are a waste product, and are consequently of comparatively small value; they are sold for stuffing cushions and chair bottoms. The silk is soaked in a solution of salicylic acid, made by dissolving the acid in methylated spirit and boiling water. After soaking and drying ten parts of the silk should weigh eleven; consequently the silk when ready for use contains ten per cent. of the acid. Before using it is advisable to tease the fibres asunder; though this is not absolutely necessary, it considerably improves the dressing, making it softer and more absorbent. At the same time its bulk is much increased, and consequently a smaller quantity is required for a dressing. When the silk is adopted as a dressing no antiseptic precautions should be neglected, the carbolic-acid spray and lotion being used in the usual manner. (Mr. A. F. McGill, p. 141.)

*CHROMICISED CATGUT LIGATURES.*—*Prof. Lister’s Process.*—The method of preparation is the following: I dissolve one part of chromic acid in 4000 parts of distilled water, and add to the solution 200 parts of pure carbolic acid, or absolute phenol. In other words, I use a one-to-twenty watery solution of carbolic acid, only that the carbolic acid is dissolved not in pure water, but in an exceedingly dilute solution of chro-



mic acid. But minute as is the quantity of the chromic acid, it exerts, when in conjunction with carbolic acid, a most powerful effect upon the gut. The first effect of the addition of the carbolic acid to the chromic solution is to change its pale yellow colour to a rich golden tint. But if the liquid is allowed to stand without the introduction of the catgut, it changes in the course of a few hours to a dingy reddish-brown, in consequence of some mutual reaction of the two acids, and a considerable amount of grey precipitate is formed. If, however, catgut about equal in weight to the carbolic acid is added as soon as the ingredients are mixed, the liquid retains its brightness, and the only change observed is a gradual diminution of the depth of the yellow colour; the precipitate, which I presume still occurs, taking place into the substance of the catgut. As soon, therefore, as the preparing liquid has been made, catgut equal in weight to the phenol is introduced into it. If you have too large a proportion of catgut, it will not be sufficiently prepared; if you have too small a quantity, it may run the risk of being over-prepared. At the end of forty-eight hours catgut steeped in such a solution is sufficiently prepared. It is then taken out of the solution, dried, and when dry is placed in one-to-five carbolic oil; it is then fit for use. I have here a sample of catgut prepared by this method. Although it has been steeped in warm blood serum since this morning at 11 o'clock, it is still translucent and firm, without being rigid, and a reef knot tied upon it holds with the most perfect security. The strength of the catgut depends upon different circumstances. In the first place, sheep differ as to the strength of their intestines, and the catgut-maker, if he understand his business, will insist upon having his raw material of the proper kind. In the next place, the intestines must not be allowed to putrefy; they must be taken fresh. For these things you must, of course, rely upon the maker of the catgut. In the next place, the liquid causes a certain amount of softening of the catgut, and if it is introduced in loose hanks, this will tend to produce a little uncoiling of the twisted cord, and a still greater degree of uncoiling will take place during drying. It is of very great importance that this should not occur, because it involves weakening of the thread, and that in different degrees in different parts, and this may lead to the gut giving way when you subject it to a strain. The catgut, then, should be prepared on the stretch, both when it is put to soak and when it is put to dry. (Prof. Lister, p. 128.)

The carbolised cutgut ligature has been in use for a period of over ten years, and it has been of immense service. You see such ligatures applied daily in our wards, and for ordinary

purposes nothing could answer better. With the exception of the main vessels in the shoulder and the hip, they are applied for the ligation of arteries in amputations in all other regions, and secondary hemorrhage after their use is never seen. They are, of course, applied directly to the artery, and not so as to include a portion of tissue surrounding the vessel. It is my distinct impression that secondary hemorrhage is not so often heard of since the introduction of such ligatures as it used to be under the use of silk. Many faults have been ascribed to carbolised catgut ligatures, but, with one exception, they are incomprehensible, as they never take place in my hands. The only deficiency which may be truly urged against them, when they are proposed as a ligature of a main trunk, or for the deligation of an artery in its continuity, is, that they are absorbed too soon. Carbolised gut softens, and yields in about forty-eight hours, and therefore in certain cases it may be necessary to use a ligature which would maintain its constricting force for a longer period. Mr. Lister has been endeavouring to secure such a ligature, and believes he has now succeeded. With a view of obtaining a ligature which would serve this end I made, during the past few years, a series of experiments with catgut prepared in chromic acid and glycerine; and without going into detail concerning these investigations, it is sufficient to say, that ligatures were obtained which admirably serve the purpose for which they were intended. They are prepared by making, first a watery solution of chromic acid, one to five; then one part of this solution is added to twenty of glycerine. This forms a dark greenish compound, in which the hanks of the catgut are inserted and retained for seven or eight months, the bottle containing them being occasionally shaken. At the end of this time the catgut acquires a semi-translucency, and has a dark colour like preserved ginger. It is then ready for use, and is stored in a solution of carbolic acid and glycerine (one to ten). The size of the catgut which is of most use in the ligation of large arteries (excluding such as the innominate) is the medium, and this size has been very frequently tested since 1877. In the shape of deep sutures, this gut has been, and, as you see, is daily being used in the wards. In this way we are enabled to ascertain its behaviour while in contact with the living tissues. The catgut has been used as a deep stitch in thirty-one instances. The earliest time in which it was found softened was nine days; the longest nineteen; the average fourteen. The softening was measured by its yielding to traction applied to both ends of the catgut, so that the ligature, though softened, still maintained its grasp at the end of fourteen



days. In another series of cases, the stitch was left until the external portion dropped off, the internal having become absorbed. It was found that this process was completed between the fifteenth and the twenty-fourth day, the average being about the twentieth day. It will be seen that there is a considerable difference between the completion of the processes in various cases, this depending on the vital activity of the tissues into which the ligatures are inserted. No opportunity has hitherto been afforded of examining, after death, the intimate relation of these chromicised stitches to the tissues. We may assume that their ultimate behaviour is similar to that of carbolised catgut, with the exception, that the phenomena attending absorption are retarded. (Dr. W. Macewen, p. 152.)

**CLUB FOOT.**—After division of the tendo-Achillis, Dr. Buchanan says: The next stage is the division of those structures which maintain the incurvation of the astragalo-scaploid joint, and which pull the ball of the great toe towards the heel. To effect this, the tenotomy knife is to be entered at the inner edge of the foot just behind the tuberosity of the scaphoid bone. It is to be kept flat and pushed under the skin till it reaches to the middle of the sole; then it is to be turned with its edge to the plantar fascia, which is to be divided with a sawing movement of the knife, the parts being kept in extreme tension by an assistant. When the knife has passed through this part of the fascia, the point is to be dipped down so as to divide as far as possible the septum of fascia between the abductor pollicis and the flexor brevis digitorum, and then the whole of the muscular substance, down to the tuberosity of the scaphoid, is to be cut through; and before removing the knife from the aperture of entrance, the point may again be depressed, and the tendon of the tibialis posticus divided proximately to its insertion into the scaphoid. (Dr. Renton, p. 119.)

**DRAINAGE OF WOUNDS.**—*Horse-hair as a Drain.*—Mr. White of Nottingham proposed horse-hair, on account of its cheapness, its increased capillarity, its non-absorbability, and its non-irritating properties. A wisp of horse-hair introduced into a wound is supposed to act by capillarity. It can do so in two ways: first, by the minute spaces existing between the individual hairs forming capillary tubes; and secondly, by the flow of the fluid along the outside of the hair. In this connection, there are one or two points regarding capillarity which it is necessary to remember. First, the finer the tube the higher will the fluid rise in it; consequently, in this respect, hair will be a better capillary drain than most sizes.



of catgut. Second, when a capillary tube of unequal diameter, wide at one extremity and narrow at the other, is placed horizontally, fluids forming a biconcave meniscus flow from the wide toward the narrow end. The hairs ought, therefore, to be spread out in the interior of the wound, and brought together near its lips, when tubes or spaces will be formed between the hairs, having their wide ends towards the inside of the wound, and their narrow extremities at the debouchement of the drain. Third, all liquids do not rise to the same level in capillary tubes, while some are actually depressed within them. Serum and liquid blood rise within these tubes, while laudable pus does not do so to any marked extent. For blood and serum, horse-hair is an excellent drain, but for pus it is not reliable.

*Capillary Syphon Drains.*—There is, however, a much more efficient way of using the hair as a drain: by converting the tubes found between the individual hairs into syphons. The power of the syphon is much greater than that of capillarity. The wisp of hair may easily be formed into a syphon by leaving the portion on the outside of the wound longer than that which remains in the interior. Before a syphon acts, a vacuum requires to be made, or a liquid communication established between the fluid to be drained and the long arm. This communication can easily be effected by dipping the hair into a weak carbolised solution before introducing it. The capillary action possessed by these hair-spaces also aids in establishing the flow. In order to maintain the tube-like form, a hair is tied round the outer extremity of the wisp. The outer part of the hair is placed in contact with moistened gauze, which further increases the syphon action.

*Drainage-tubes of Chicken-bone.*—The principle of using a tube which would serve its purpose as a drain, and then become absorbed, was excellent, provided this could be carried out practically. What was wanted was a tube which would remain in the tissues, as a drain for eight or ten days; and which at the same time, would be reasonable in price. The hollow bones of birds and some animals could be easily converted into tubes. After examining and experimenting with the tibiae and femora of many birds and animals, it was seen that the tibiae and femora of the domestic fowl were the most suitable as to length and calibre. The method of preparation is as follows. The tibiae and femora are scraped and steeped in hydrochloric acid and water (1 to 5), until they are soft. Their articular extremities are then snipped off with a pair of scissors; the endosteum is raised at one end, and pushed through to the extremity, along with

its contents. They are then reintroduced into a fresh solution of the same strength, until they are rendered a little more pliable and softer than what is ultimately required (as they afterwards harden a little by steeping in the carbolic solution). When thus prepared, they are placed in a solution of carbolic acid in glycerine—1 to 10. They may be used at the end of a fortnight from the time of introduction into the glycerine solution. Holes may be drilled in them with a punch, or clipped out with scissors. (Dr. W. Macewen, p. 157.)

**EXCISION OF THE WRIST JOINT.**—*An Improved Method.*—I have planned an operation by which the dorsal incision is altogether dispensed with, and the tendons are separated with less disturbance than was formerly possible—advantages, as I think, of considerable importance, since the large wound in the midst of the tendons is thus avoided, and consequently no cicatrix is left to which the adjacent parts become matted, as so often happens after the operations of Lister and Langenbeck. Another point on which I lay great stress is the preservation of the trapezium. The subsequent utility of the thumb, and indeed of the whole hand, is greatly enhanced by this. For details of the operation and illustrative woodcut, see page 118. (Dr. W. Roger Williams, p. 117.)

**GENU VALGUM.**—*Treatment by Condylotomy.*—Having anæsthetised the patient and applied an Esmarch's bandage, flex the knee, and map out the condyle for division, by a line sufficiently oblique to allow of the process easily gliding upward on its section. This line will nearly correspond to the junction of the inferior fifth of the femur with the inner margin of the ligamentum patellæ, extending into the sulcus between the condyles, and external to the nipple-like elongation of the internal condyle. Having cut down with a scalpel on the internal condyloid ridge at the point indicated, the limb is laid on the outer side on a hard cushion, and the chisel introduced with the necessary degree of obliquity. The handle of the instrument is then firmly grasped, and, by a sawing movement, pressed onward in the defined direction. Having passed the chisel as far as may be considered necessary, it is not withdrawn, but is impelled anteriorly and posteriorly in the same manner, so as almost to separate the condyle, the detachment of which is completed by using the chisel as a lever, the fulcrum being the shaft of the femur. The limb is now forcibly straightened, and the inner condyle may be felt to glide upward until on the same plane as the outer process, its progress being limited by the attachment of the internal lateral ligament of the knee-joint, which was previously elongated. Sometimes the tendon of the biceps, a band of



the fascia lata, or even the vastus externus, may resist the forcible straightening of the limb. A division of these structures should be made, which will give rise to no further complication. The wound should then be dressed, and a straight splint put on the outside of the limb. Any hemorrhage that may occur is readily arrested by pressure. (Mr. R. L. Swan, p. 120.)

**PERFECTLY BLOODLESS OPERATIONS.**—The “bloodless” method of operating, recommended some years ago by Esmarch, is opposed by many surgeons on account of the general oozing which is apt to occur after removal of the elastic tube. Esmarch describes in *Verhandl. d. Deutschen Geselsh. f. Chirurg.* the latest practical modification of his mode of procedure, by means of which such oozing may be completely prevented. In amputations, the operation is performed in the usual way by the bloodless method; all vessels requiring ligature are then carefully sought out and tied, and the wound at once closed with catgut sutures; drainage tubes, capable of being absorbed, are introduced, and Neuber’s permanent compressing dressing applied. Then, and not till then, is the elastic tube removed from the limb. After the patient is placed in bed, he should keep the stump up in the vertical position for at least half an hour. [Neuber’s permanent dressing consists of an antiseptic cushion, four-cornered, made of carbolised gauze filled equally and smoothly with carbolised jute; this cushion is applied directly to the wound, and is kept firmly in place by an elastic bandage which overlaps the dressing.] Of twelve amputations (9 of the leg) performed and treated in this way, secondary hemorrhage occurred in none; in most of them the first dressing was not removed for 14 days, and on it was then found only a narrow, dry streak of blood, corresponding to the linear cicatrix. In resection the author advises that after all visible ends of vessels have been tied, the wound should be closed with the continuous Glover’s suture, and that the limb should then be made fast to a splint and kept elevated for at least half an hour. In 56 resections managed in this way since 1878, neither secondary hemorrhage nor death had occurred. Since Easter 1879, the author had also, in his operations for diseased bone, given up the practice of plugging the cavity from which the sequestrum had been removed; instead of this he now carefully disinfects the cavity, introduces absorbable drainage tubes, closes the wound in the skin at once, and applies the permanent dressing; the last step in the proceeding is, as before, the removal of the elastic tube. Twelve cases were treated in this fashion, and in none of them did secondary



hemorrhage occur; in all of them the wound remained aseptic, and in several instances complete primary union took place. Esmarch also states that he has frequently adopted, and with similar results, the same method in various other operations on the extremities, such as the removal of tumours from these parts; in the neighbourhood of the shoulder and hip-joints, however, it is a matter of much greater difficulty to carry out the above directions, and so to obtain a perfectly bloodless operation. (Glasgow Medical Journal, Oct., p. 165.)

**PLASTIC SPLINTS.**—*Mr. Gamgee's Millboard Splints.*—The results of experiments with millboard splints may not be uninteresting. The millboard splints described in my former communication on wound-treatment (Brit. Med. Journal, Oct. 30), though very effective, are liable to the objection that their preparation requires time and practice. By soaking light rough millboard in a strong solution of boiling dextrine, and then exposing it to dry, a very good splint material is produced. It is strong, and easy of manipulation, and can be kept ready for immediate use in a variety of sizes. The prepared hard splints become soft and mouldable to any shape, by placing them on a dish or tray, and pouring over them just enough boiling water to cover them. Soaking for two minutes is quite sufficient. By the same process, the splints, once used and hardened, can be moistened and used more than once. Any strength can be secured with two or three thicknesses; and, during the drying process, a piece of the dry gummed millboard bandaged on the outside gives as much stiffness as a wooden splint, and is much less cumbersome. When used with the absorbent gauze and cotton pads, the prepared splints dry much more quickly and firmly than with the ordinary cotton bandages and cotton wadding. (Mr. Sampson Gamgee, Brit. Med. Journal, Jan. 15, p. 85.)

*Asbestos Felt for Plastic Splints.*—Dr. Stuart Eldridge, of the General Hospital, Yokohama, Japan (in the New York Medical Record), calls the attention of the profession to the great advantages of asbestos roofing felt as a material for plastic splints and other moulded apparatus. In a brief statement, he gives the qualities in which it excels those now in vogue. 1. It is rendered perfectly soft and flexible by brief immersion in water of a temperature easily borne by the hand. 2. It retains its plasticity long enough to allow of careful adaptation, while its stiffness is instantly restored by a dash of cold water. 3. While soft it does not change dimensions, which is often the case with gutta-percha. 4. It remains unchanged after indefinite exposure to the heat and

moisture of the body, nor is it affected by any of the ordinary lotions applied in cases of wound or fracture. 5. It is perfectly antiseptic, on account of the coal-tar with which it is saturated, a quality which would of itself commend its use in compound fracture. 6. It is so cheap, that its cost is hardly worth mentioning, even in large institutions. (London Medical Record, Nov. 15, p. 453.)

**SPRAINED ANKLE.**—Mr. Dacre Fox, in treating sprains by the application of direct, equal, and continuous pressure (Brit. Med. Journal, Sep. 25) finds that the joint returns quickly to its normal condition, the pain being speedily relieved and rigidity prevented. The treatment is divided into two stages: the first lasting from a day to a week, or longer, during which care is taken to avert inflammation by rest, warm applications, anodyne lotions, &c.; the second commencing when the joint has become cold, swollen, and painful on movement,—in fact when the injury has assumed a more or less chronic character. Mr. Fox gives as an example of his meaning the case of a sprained ankle, and proceeds to describe his mode of treatment in the following words:—If a wire be passed round the joint so as to impinge on the two malleoli and the *tendo Achillis*, it will define three or four well-marked hollows, one on each side of the *tendo Achillis* behind each malleolus, one in front of the fibula, with a shallower one in front of the tibia. When the ankle is severely sprained these fossæ become obliterated, and are filled up with effusion, over-stretched ligaments, and displaced tendons. To carry out the first principles of treatment by direct, equal, and continuous pressure, it is clear that the fossæ mentioned above must be filled, or rather their sites covered by pads, so as to cause the retaining plasters, bandages, and splints to exercise equal pressure everywhere. By making pressure with the thumb from below upwards in the line of the fossæ, a good deal of the œdema may be squeezed away, and the displaced tendons in some degree restored. As a rule Mr. Fox makes five pads (of tow and lint, or leather): two about four inches long by one inch broad (one a little shorter than the other, so as to be better adapted to the curve extending upwards from the dorsum of the foot to the crest of the tibia); another, shorter, broader, and thinner, to place over the *tibialis anticus* and *extensor proprius hallucis*, and two, three, or four inches long and bolster shape, to fill in the posterior fossæ on each side of the *tendo Achillis*. It is often advisable in old-standing cases to supplement the pads by strips of plaster to ensure firmer pressure. Both pads and strips of plaster should be



made to fit exactly, since if they are too large they are useless from the pressure being too diffuse, and if too small they exercise too little pressure. To keep the pads in their place a long extended half-moon-shaped piece of plaster (*emplastron saponis* spread on leather), long enough for the ends to overlap in front when the heel is placed in the centre, and a narrow oblong piece above this are placed round the lower part of the leg to cover the upper part of the pads. The handiest way to apply the pads is to place an india-rubber band above the ankle, to slip the pads under it, and then planting the heel in the centre of the curved plaster to bring the two ends across the front of the joint so as to overlap. The pads having been secured in position, the elastic ring is to be cut, and the oblong piece of plaster put on so as to encircle their upper ends; lastly, the whole ankle is to be firmly bandaged. (*Practitioner*, Jan., p. 51.)

#### DISEASES OF THE URINARY SYSTEM.

GONORRHOEA.—Mr. W. Watson Cheyne, Assistant-Surgeon to King's College Hospital, has carried out a series of experiments in the treatment of gonorrhoea which are worthy of being extensively known. It has been demonstrated by Neisser that organisms are present in great abundance in gonorrhoeal pus, and Mr. Cheyne has verified the observations by inoculating cucumber infusions with some of the discharge. Acting upon the known effects of certain antiseptic materials, he decided to adopt iodoform and oil of eucalyptus. In order to bring them into certain contact with the suppurating surface, he had bougies made of these materials and cacao butter. The formula is—five grains of iodoform, ten minims of oil of eucalyptus, and thirty-five grains of cacao butter. The bougie is introduced into the urethra, and a strap and pad over and around the orifice retains the bougie there until it is dissolved. After this, an injection of boracic lotion (saturated aqueous solution of boracic acid) or an emulsion of eucalyptus oil (one ounce of eucalyptus oil, one ounce of gum acacia, water to forty or twenty ounces) to be used for two or three days. At the end of that time injections of sulphate of zinc, two grains to the ounce, may be begun. For a day or two the purulent discharge continues, but afterwards it steadily diminishes in amount, becoming in four or five days mucous, and ceasing altogether in a week or ten days. (*Brit. Med. Journal*, and *Practitioner*, Dec. p. 451.)

LITHOTRITY AT A SINGLE SITTING.—Speaking with caution, it appears to me that at present we are not justified in attempt-



ing to remove all stones by crushing, and certainly not by any one system of crushing. The new method renders lithotrity safer than before for stones already generally assigned to that process, and extends the crushing operation to some which are larger than those hitherto so operated on. But I still regard lateral lithotomy as an admirable procedure, not only for hard stones—say of about two ounces weight and upwards, as a rough general estimate—but also for smaller ones, in some cases where the urethra is not very large, or other circumstances seem to indicate it. And in connection with such exceptional circumstances, it is not improbable that the high or supra-pubic operation may be occasionally preferable. I have myself performed it twice when the lateral operation was inapplicable. Further, I cannot doubt that many men, whose experience is necessarily small, would cut for a hard stone, weighing an ounce, more safely than they would crush it at a single sitting. Great and irretrievable damage may be easily inflicted by large lithotrites and evacuators in unpractised hands. (Sir Henry Thompson, p. 208.)

URETHRAL FISTULÆ AND CHRONIC CYSTITIS.—*Bladder Drainage*.—How can a fistulous wound in the urethra be kept dry for some time, and thus placed in favourable conditions for healing? After various experiments and trials, the following method was adopted: A gum-elastic catheter is introduced and fixed to the penis with sticking-plaster. Care is taken that the eye of the instrument is just within the neck of the bladder. To this catheter an india-rubber tube is fixed, of sufficient length to reach without being strained over the side of the bed to the floor. It then passes into a bottle. The bottle and tube are filled with carbolised water before attaching the apparatus to the catheter. Care is taken that no air can get in at any of the joints. It is well to introduce a piece of glass tubing at a convenient part for observing the direction of the flow. In order to keep the india-rubber tube steady in the bottle a piece of glass tubing is attached to its extremity. If the glass tube extends beyond the neck of the bottle, any folding of the india-rubber tube at this point will be prevented. It will be evident that a syphon action is in this way established, with a suction power the strength of which depends on the height of the column of water, and which will draw the urine into the eye of the catheter as it passes drop by drop from the opening of the ureters into the bladder, and a constant slow current of water will pass along the tube into the bottle. The bottle is allowed to overflow into a basin, which, as it fills, can be emptied by the nurse without any risk of displacing the apparatus. The bladder is kept constantly

empty, with the exception of two tiny streams of urine from the ureters to the eye of the catheter. Care must be taken not to have too great a fall, or the suction of a piece of mucous membrane into the eye of the catheter will cause uneasiness and plug the catheter. The height of the hospital bed is generally sufficient, and in some cases even a less height is all that is required. Let me more particularly direct attention to bladder-drainage in chronic cystitis. It will, I think, take a most important place in the treatment of that troublesome and common affection. The two great symptoms are frequency of micturition (irritable bladder), and excessive quantities of mucus in the urine (catarrh of the bladder). The first symptom is at once relieved by the use of the instrument, and in some cases its use even only during the night gives the patient unspeakable comfort, but in the majority of cases it is best kept in the bladder continuously. The difficulty is the choking of the instrument with mucus; this will be prevented by having a double eye in the catheter, and by raising the bottle night and morning in order to make a back-flow, which clears the instrument. The patient can very soon tell when the flow ceases, and the bottle can then be raised slightly above the level of the patient. At once the plug of mucus is displaced. It is very interesting to observe the effect of rest to the bladder as indicated by the decrease in the quantity of mucus. In one case of perineal fistula, complicated with chronic cystitis, this improvement was very marked. The systole and diastole of the bladder are excessively increased in irritable bladder. No heart would stand such an increase in its pulsations. This, in my opinion, is one of the reasons why chronic cystitis is so intractable, and any means by which we can prevent the periodic rise and fall of the bladder, the incessant unrest of the organ, will always be of the greatest value in relieving inflammation of the viscus. For its value in chronic cystitis alone I would be inclined to recommend a careful trial of bladder-drainage. By some means or other let it be carried out; the method matters not. What is important is to come to a conclusion as to the value of the principle involved. Its main value in chronic cystitis, in my opinion, is to give the bladder rest. It acts as a drainage-tube in a wound or in an abscess cavity. It has, however, a value in urethral fistulæ: in those requiring plastic operations it keeps the wound dry and allows speedy union to take place; in those requiring only that the urine which is abnormally passing along the fistulæ and keeping them open should be prevented from so doing, by being drained off immediately on its entrance into the bladder. *To give the bladder rest and to keep the urethra dry*, I know no better means than that which I now advocate. (Mr. John Chiene, p. 214.)



## AFFECTIONS OF THE SKIN, ETC.

**CHRONIC ECZEMA OF THE PALMS.**—Dr. Duncan Bulkley (Chicago Medical Journal) states that chronic eczema of the palms, where the surface is hard, dry, fissured, often shiny, and the hands well-nigh useless, will sometimes seem almost to melt away under the daily soaking of the palms on the surface of a basin of scalding-hot water, followed by diachylon or other ointment. Eczema of the ends of the fingers and of the nails sometimes yields to this, after all other measures have failed. (Practitioner, April, p. 298.)

**ECZEMA DIGITORUM.**—The situation being on the fingers and often the interdigital spaces, the intolerable itching augmented by heat and the existence of vesicles, make the resemblance very strong. In distinguishing between them, it is well to recognise the greater frequency of scabies at all ages, and especially in the young, in every station of life, as compared with eczema digitorum. Vesicles are present in both eczema and scabies, but in eczema they are small, uniform in size, and clustered—involving a large part of the finger; the skin, moreover, becomes infiltrated and thickened, with various cracks over the joints, and the seat of the disease is accurately defined; while in scabies vesicles occur only here and there on several fingers, wherever the young acari lie, and beside the burrows of the females, and hence they are few in number and discrete; again, they are found on the palm and wrist, at the head of the ulna, as well as between the fingers. Moreover in scabies, in certain irritable skins, a number of secondary eruptions—erythema, pustules, bullæ, and scabs—may be detected about the hand, on the wrist, and palm, and extending up the arm. The very irritation differs, for the itching of scabies is stated to be less unpleasant than that of eczema, and to be free from the smarting and tingling of the latter. (a) In the early or acute stage, while there is but little thickening, to apply on strips of old linen wrapped round each finger, and covered with a glove, either ung. hydrarg. ammoniat., of the strength of 3 i. ad ʒi., or equal parts of vaselin and the oleate of zinc (introduced by Mr. Crocker). If there be much tingling or itching I add to each ounce ℥x of chloroform, or ℥xij. of acid. hydrocyan. dil. The ointment should be allowed to remain undisturbed for about twenty-four hours. It should then be well washed off in oatmeal-tea, and fresh ointment on fresh linen reapplied. (b) When induration exists, stronger and more stimulating ointments may be employed, or, what will answer better at first, macerating the skin by a water poultice, or by simply covering the finger with an india-rubber finger stall. It



should be closely fitting, but should not interfere with the return of the venous blood. If the patients can wear these rubber finger-gloves, very rapid improvement will be seen to follow; the skin becomes pliable, soft, and thin, the scales disappear, and the rhagades close up, and the oleate of zinc ointment, or one made of bismuthi nitras (℥i. ad ℥i.), will speedily complete the cure. For the itching, which is sometimes very severe in the stage of infiltration, there is no remedy so efficacious as tar, and it may be employed either in the form of an alcoholic solution in combination with soap (saponis mol., ol. picis vel cadini, alcohol āā, partes æquales), or what I find answers better in an ointment such as this:—  
 R<sub>x</sub>. Cremonis frigid., ℥i.; ung. picis, 3 iij.—3 vi.; zinci oxidi, 3 i.; hydrarg. ammoniat., 3 j.; vaselini, ad ℥ij., Ft. ung. (Dr. Magee Finny, p. 262.)

**LUPUS.**—*Scraping with Volkmann's Sharp Spoon.*—The employment of Volkmann's sharp spoon for the treatment of lupus is likely to meet with more and more general acceptance. It presents several advantages over the older methods of dealing with these painful cases, which indeed are for the most part so unsatisfactory, that surgeons are often tempted to abstain altogether from interference of any kind. The principal merits claimed for this way of treating the disease are, in the first place, its extreme simplicity, and in the second, that it is possible to tell with great accuracy when the limits of the affected parts have been reached. A tolerably sharp spoon should be used, with a short strong handle, and the affected surface should be scraped until all the soft tissue has been completely removed. Nothing is more easy than to tell when healthy structures have been reached, by the sense of resistance they offer; and, unless an unreasonable amount of force be employed, these cannot be materially injured. If an extensive surface has to be scraped, an assistant is necessary, as considerable capillary hemorrhage frequently occurs. A very comfortable and satisfactory dressing for the after-treatment is an ointment formed of iodoform, eucalyptus oil, and vaseline, in the following proportions:—Iodoform, gr. xx.; eucalyptus oil, 3 j.; vaseline, 3 j. This preparation, it may be mentioned, is a very useful one in many forms of ulceration accompanied by a foetid discharge. It is powerfully antiseptic, and at the same time extremely bland, so that it allows healing to go on rapidly beneath it. The ointment may be spread conveniently on thin rag, which adapts itself readily to the inequalities of the face, or, if a larger supply be advisable, it may be put upon the surface of a piece of lint. (Mr. Rickman J. Godlee, p. 248.)

**PRURIGO.**—*Carbolic Acid*.—M. Lallier, of the St. Louis Hospital, Paris, uses in pruriginous affections of the skin a solution of carbolic acid (2 per cent.), to which he adds half an ounce of glycerine, as compresses, or better, in the form of spray. Its anæsthetic properties cannot be contested, and no inconvenience results from its continued use. (Med. Press and Circular, Nov. 24, p. 444.)

**PRURITUS ANI.**—Dr. Packard has found the following ointment succeed in relieving obstinate cases of pruritus ani, in which the whole array of the ordinary remedies had failed :  
 R<sub>x</sub>. Camphoræ, chloral. hydrat. āā 3 ss.; ungt. petrolei, 3 vij. Sig. the ointment; apply frequently. (Practitioner, Dec., p. 460.)

**PSORIASIS.**—*Pyrogallic Acid*.—In a case of this kind treated by pyrogallic acid, the treatment of the patch was resumed with a weak ointment, one part of the acid to twenty of lard. In six days the patch looked much better, and within a fortnight it was well. In order to avoid any possible ill effects from the acid a few patches only were treated at a time. Those on the abdomen were attacked first, and then those on the back, and finally those on the limbs. The curative action of pyrogallic acid is due, I believe, simply to its irritant qualities, and to certain properties as an irritant in regard to which we are ignorant. The irritant effects are most conspicuous around the hairs, each hair-follicle being the seat of a small brown patch, which, when it is scratched off, often leaves an abrasion in its place. At one stage of its curative action the mode in which the psoriasis patch enlarges is well illustrated, the dull-brown epidermis which marks the extent of the diseased surface being bounded by a thin red margin. This thread-like border corresponds to the vascular congestion produced in the bloodvessels by the extension of the psoriatic epithelium. (Dr. G. Thin, p. 246.)

**RINGWORM.**—*Thymol and Menthol*.—The value of carbolic acid as an antiseptic and a destroyer of low vegetable organisms is, I am sure, too well known through the brilliant researches and results of Prof. Lister to need any introduction from me. Here then seems to be our sheet anchor. A powerful well-recognised antiseptic would soon destroy our enemy, and some eminent authorities recommend it as one of the best of remedies. Dr. Alder Smith uses equal parts of carbolic acid and glycerin, the latter to carry the antiseptic to the bottom of the follicle. We should turn our attention to remedies that are *gentle* in their action. I am confident that many old-standing cases of ringworm are the result of *over-treatment*—that is to say, a chronic eczema is produced by the



remedies, and kept up for months and years, while the fungus all the time exists undisturbed. Of late, with the view of carrying theory into practice, I have been trying some combinations of drugs, which I will now briefly describe. Seeking for an antiseptic or parasiticide which would be less irritating than carbolic acid, and without its dangers, I have been led to try thymol and some other similar drugs. Thymol, a camphoraceous body belonging to the phenol series of aromatic compounds, is present in small quantities in oil of thyme, but is obtained chiefly from the seeds of the *Ptychotis ajowam*. It is a powerful antiseptic, being, according to Bucholz, eight to ten times as efficient as carbolic acid in preventing the development of bacteria. It is not nearly so great an irritant to the skin when applied locally, and there is no risk of constitutional poisoning. Menthol is a somewhat similar substance obtained from Japanese oil of peppermint. That it is not far inferior to thymol as an antiseptic, I think you will see from the following experiments. From its power of relieving neuralgia when placed on the skin, and the numbness its application produces, it might be used with good results instead of thymol when there is much tenderness or irritation. I use a mixture of chloroform and olive oil in which to apply thymol or menthol. This solution I have found of great value, and I have used it both in recent and in chronic cases with success. If employed carefully in the way about to be mentioned, it quickly cleans the scalp, thereby curing the eczema, while at the same time it destroys the fungus. It encourages the growth of new hair by stimulating the cells of the papilla; and it dissolves the fatty matter that fills up the neck of the follicle. The new hair, as it rapidly shoots up, pushes out the old diseased stumps, and raises the fungus towards the surface. In this way the disease is more quickly cured than by any other method I have seen or tried, and it has the additional advantage of not destroying the hair sacs, and consequently does not leave the unsightly bald patches which undoubtedly result from the heroic treatment. Already I have had the satisfaction of seeing several cases of fifteen or eighteen months', or even two years' duration yield to the mild treatment in six to eight weeks, and I have not considered the cure proved till several weeks of perfect freedom from the disease have been allowed to elapse after the discontinuance of the remedy. I would add a word or two of instruction as to its use. First, let the part be well washed with soap and water if it is not tender. After it is dried rub the oil in gently, taking care that the friction be not too severe or too long continued, for fear of producing a mechanical eczema. After the treatment



is commenced neither soap nor water should be again used. If there is the slightest tenderness let the oil be simply painted on and not rubbed. If there are scabs present remove them gently with a comb after soaking them with the oil, which must be applied to the surface beneath. It is in the chronic squamous cases that the rubbing is well borne, but it should nevertheless be done gently and for several minutes two or three times a day, in order that the part may become thoroughly soaked with the oil. If you see at any time the slightest irritation being produced, stop the rubbing, and order the application to be merely smeared on; if it still causes irritation add for a while one-third more oil, but you will find the liniment will soon be tolerated at the proper strength. No cap should be worn in the house during the treatment, as it is essential that the head be kept cool. (Mr. Malcolm Morris, p. 256.)

*Croton Oil.*—There is one essential condition of success in treatment on which everything, as it were, depends, and that is, that the remedy be brought into close contact with the disease; without this, all remedies are equally useless. In illustration of this point, we constantly see a patch of ringworm on the neck cured by a single application of iodine; but it may take years to cure a similar patch on the scalp. The disease is exactly the same in the two cases, and would be just as easily cured in the one as in the other, if only the remedy could be brought into direct contact with the parasites, as indeed readily happens in ringworm of the scalp in infants. Croton-oil supplies us with just such a remedy as we want, for it has the property of reaching the disease, and setting up a deep-seated follicular inflammation which destroys the trichophyton. The best way of using the croton-oil is as follows. A single small spot, not larger than a shilling, should be treated first; the croton-oil should be carefully but thoroughly painted on with a small stiff camel's hair brush; a few hours afterwards, a warm poultice should be applied and kept on all night. The croton-oil must usually be applied again the next day, followed as before by constant poulticing; a third and sometimes a fourth application may be necessary to set up the required amount of inflammation; the skin should be swollen, boggy, and discharging freely, like a natural kerion; the production of this is much favoured by warm fomentations and poultices. As soon as this condition is produced, no more croton-oil should be applied; frequent warm fomentation is all that is then necessary; and when, in the course of a day or two, the inflammation has a little subsided, the stumpy hairs

should be extracted entire; this is easily done, as they are for the most part loose in their follicles, and can then be removed without pain. If a good kerion have been established, the *cure is complete*; if only an imperfect one have been formed the process may, after some time, have to be repeated over part of the same area. (Dr. R. Liveing, p. 260.)

There are two essential points to be borne in mind in the local treatment of this disease, when it has become chronic, and has penetrated the deep hair-follicles of the scalp. The first point is that, whatever parasiticide is employed, it must be made to penetrate the hair-follicles. This may be brought about (1) by rubbing the parasiticide, whether in the form of an ointment or liniment, well into the part; (2) penetration may be greatly aided by using some subtle penetrating fluid as the vehicle for the remedy, such as alcohol, ether, benzine, turpentine, &c.; (3) by the removal of crusts, scales, and diseased hairs, which leaves a clearer channel for the entry of the medicaments. The second point to be remembered is that, if the efficient application of remedies as above indicated fail to remove the disease, and the complaint be of limited extent, and there exist no special reason in the case to contra-indicate such measures, the parasite may generally be destroyed by setting up an inflammation that involves the cutaneous tissues as deep as the hair-follicles extend. This may be best accomplished by painting the affected part with strong croton-oil liniment (which may be repeated if necessary), so as to cause pustulation. It is necessary that the pustules should involve the tissues at least to the depth of the hair-follicles, and should be contiguous, so that there may remain no portion of the skin-structures between the pustules beyond the sphere of the inflammatory action. No permanent loss of hair nor sloughing has followed the use of croton-oil in this way in my experience. (Mr. Wyndham Cottle, Brit. Med. Jour., Feb. 26, p. 304.)

Dr. Ladreit de Lacharrière, recognising the difficulty of eradicating the *trichophyton* from the root-bulbs in chronic tinea tonsurans by the ordinary lotions, ointments, and applications, refers to the advantages of croton-oil in destroying the diseased hairs and stumps by a process of suppuration (or an artificial *kerion*), while leaving the follicles intact. He states that the treatment was successful in eighteen cases, the duration of treatment lasting from six weeks to two months; and the cases treated, were of the tender age of from two to five years. Instead of employing the pure oil Dr. Ladreit de Lacharrière thinks better results are to be obtained from using it mixed with cacao-butter and white wax, in the pro-



portions of 100 parts of the oil to 50 parts each of the adjuncts ; and he advises that it should be made in moulds, so as to resemble a stick of *cosmetique*, as thereby the croton-oil can be applied with great accuracy as to both extent and depth. (Dr. Finny, Brit. Med. Jour., Feb. 26, p. 303.)

*Improved Mode of Epilation.*—I wish to draw attention to a method of epilation which I have recently practised, and which I believe to be more effective, more expeditious, and less objectionable than epilation by forceps. It is generally acknowledged that epilation is desirable. It is admitted by every one, that epilation by means of the forceps is, at the time when it is most required, that is to say, when the hairs are the most diseased, impracticable, on account of the extreme brittleness of the hairs. My plan is this, and it is a very simple one. When scabs exist over a patch of ringworm, I peel the scab carefully off in one piece. When scabs do not exist, I produce them artificially, and then carefully peel them off in one piece. Thereupon the under surface of the scab is seen to be thickly studded with the white frosted hair-stumps which are peculiar to ringworm, presenting the appearance of the chin of a grey-bearded man who has not been shaved for a week. Now these stumps are considerably longer than any bits that can be pulled out or rather broken off by means of the epilating forceps ; it might be supposed that it is impossible to peel a brittle scab off in one piece, and that it would be painful to attempt it. But the scab may be expeditiously taken off whole and without any pain, if it be removed by means of the small sharp steel spoon that I am in the habit of using for performing “*eration*” in cases of lupus. It is sold by Messrs. Weiss of the Strand. The scab adheres to the skin *only all round its edge*. By applying the side edge of the spoon to the edge of the scab and then slightly rotating the spoon, the edge may be completely detached all round without hurting the skin in the least degree. Then commencing again at one edge of the now loosened scab, and advancing the spoon along the under surface of the scab, constantly making use of the lever movement which is effected by repeated slight rotations of the spoon, the whole scab may be rapidly removed in one unbroken piece with the effect that I have described. I should add that I first remove the hair of the whole of the scalp by means of my human hair-clipper, which is sold by Messrs. Adie of Pall Mall, and by the various instrument-makers, and which I believe is now in general use as an aid in the treatment of diseases and injuries of the scalp. (Dr. Balmanno Squire, Brit. Med. Jour., April 9, p. 549.)



*Ringworm and Psoriasis.*—*Chrysophanic Acid.*—Dr. Balmanno Squire advocates the use of chrysophanic acid (in preference to Goa powder) in the treatment of ringworm. He finds that the acid contains all the virtues of the Goa powder, and is useful in cases of psoriasis as well as of ringworm. The best method of application is in the form of ointment, which we prepare according to Dr. Squire's formula. (Ferris & Co.'s Notes on New Medicines, p. 67.)

SOOTHING OINTMENTS.—Dr. McCall Anderson recommends the following ointments in the treatment of skin diseases :

*Unguentum Oxidi Zinci Benzoatum (Erasmus Wilson).*—Is one of the most favourite remedies in this country, Bell's formula for which is as follows:  $\mathcal{R}$ . Adipis præparati,  $\mathfrak{z}$  v., gummi benzoin. pulver.  $\mathfrak{z}$  j. Liquefac, cum leni calore, per horas viginti quatuor, in vaso clauso: dein cola per linteam et adde—Oxydi zinci purificati,  $\mathfrak{z}$  j. Misce bene, et per linteam exprime. To this a drachm of rectified spirit, spirits of camphor, or Price's glycerin, may sometimes be added with advantage. The benzoin prevents the ointment from becoming rancid and irritating, whilst at the same time it imparts to it a certain fragrance. It is an excellent preparation, but, owing to the white crust which is apt to form, it is inferior to others when the eruption is situated upon uncovered or upon hairy parts. In such situation, the zinc ointment of Dr. Bulkley is preferable, and is composed of pure carbonate of zinc and the ceratum galeni, in the proportion of half a drachm to the ounce.

*Unguentum Diachyli Alba (Hebra).*—The formula for this valuable ointment is:— $\mathcal{R}$ . Olei olivæ,  $\mathfrak{z}$  xv., litharg.  $\mathfrak{z}$  iij. et  $\mathfrak{z}$  vj. Coque l. a. in ung. moll., dein adde—Ol. lavandulæ,  $\mathfrak{z}$  iij. M. ft. unguentum. This ointment is likewise unsuitable for hairy parts on account of its matting the hair together.

*Unguentum Zinci Oleatis.*—More recently, several varieties of soothing ointments containing oleic acid have come into use, one of the best of which is the "unguentum zinci oleatis," recommended by Dr. Crocker, the formula for which is as follows:— $\mathcal{R}$ . Zinci oxidi,  $\mathfrak{z}$  j., acidi oleici,  $\mathfrak{z}$  viij., vaselini,  $\mathfrak{z}$  ix. Rub up the oxide of zinc with the oleic acid, and let it stand for two hours; then place in a water-bath until the zinc is dissolved, add the vaselin, and stir until cold.

*Oleate of Lead Ointment.*—Dr. Sawyer has recently recommended an oleate of lead ointment, which is composed of lead oleate 24 parts, heavy and inodorous paraffin oil 14 parts. The lead oleate is prepared by heating a mixture of oleic acid and oxide of lead, 1 part of the former to 8 of the latter. It is prepared

in the same way as the last ointment, but it seems to be inferior to it as a sedative application.

The best soothing ointment is prepared in the same way as the oleate of zinc, and is composed of—℞. Bismuthi oxidi, ℥ j., acidi oleici, ℥ viij., ceræ albæ, ℥ iij., vaselini, ℥ ix., olei rosæ ℥ v.

Instead of merely rubbing soothing ointments upon the inflamed surface, it is always preferable, when at all possible, to apply them spread thickly upon pieces of linen, which should not be too large, else they do not lie evenly upon the inflamed parts. The application of these ointments is indicated when the eruption is acute and recent; when there is much inflammatory tumefaction or œdema; when, instead of itching, burning heat or pain is complained of; when the part is the seat of vesicles or of pustules; when, instead of being dry, it is the seat of serous or, above all, purulent exudation; or when it is covered with crusts, the result of the desiccation of recent exudation. In cases of tinea sycosis (ringworm of the beard), when the part is swollen and indurated and when burning heat and pain are complained of, the most important part of the treatment consists in the extraction of the hairs. (Specialist, Sept. 1880.)

**SULPHUR IN DISEASES OF THE SKIN.**—Sulphide of calcium is very valuable in skin lesions attended with suppuration. In *acne* it is often useful, but chiefly in those cases which have a considerable pustular element. It is not of much use in *acne rosacea*. In *hordeoleum* it is very valuable; also in *furunculosis*, relieving not only the symptoms, but preventing further crops of boils. Like testimony may be given regarding its effects in carbuncle and suppurating buboes. True, non-parasitic *sycosis* is sometimes benefited by sulphide of calcium. The drug is liable to be poor, and should have its characteristic smell of sulphuretted hydrogen. Dr. Bulkley usually gave gr.  $\frac{1}{4}$  q. i. d. It is undoubtedly the sulphur that does the good in these cases, for other combinations of sulphur, such as the hyposulphite and sulphuric acid, have been found similarly beneficial. A wonderfully valuable combination of sulphur is that known as "Startin's Mixture:"—℞. Magnes. sulph. ℥ i.; ferri sulph. ℥ i.; acid sulphur. dil. ℥ iij.; tr. gentian, ℥ i.; aquæ, ℥ iij. M. sig.—℥ i. dose after meals. This is very potent in reducing cutaneous congestion in such conditions as erythema multiforme, erythematous eczema, and urticaria. In regard to the use of natural sulphur waters, some benefit is obtained from them, but it is impossible to speak definitely of them until more data are collected. Dr. Bulkley will be pleased to receive help from any in collecting such facts. Externally, sulphur



has gained its widest reputation in the treatment of scabies, for which it is almost a specific. It should be remembered that sulphur is an irritant to the skin. Besides scabies, sulphur is beneficial in acne, either in the form of the pure sulphur or the hypochloride, the latter being used as an ointment about ʒi. to ʒi. Sulphur will also destroy the parasite of favus, ringworm, and tinea versicolor, pure sulphurous acid being the best form for these. Sulphur vapour baths are of value in very few diseases of the skin. They stimulate the skin and liver, and they destroy skin parasites. But not much more can be said for them. (Dr. Bulkley, Practitioner, Feb., p. 126.)

**TATTOO MARKS AND MOTHER'S MARKS.**—*Ethylate of Sodium.*—The ethylate is very rapid and effectual in removing tattoo marks, and it admits of being employed with promise of good results in the removal of those diffused nævi called blood-stains, or mother's marks, when they are not extremely extensive. (Dr. B. W. Richardson, p. 192.)

#### DISEASES OF THE EYE AND EAR.

**AURAL POLYPI.**—Dr. Miller of Edinburgh has successfully treated nasal polypi by a spray of rectified spirits. Now, it is evident that if rectified spirit proves as effectual in the treatment of aural as in nasal polypi it supplies two desiderata. In the first place, after the removal of a polypus, it will prevent its recurrence; and being a remedy which the patient can apply at home, it will do away with the necessity for the constant visits to the surgeon which cauterization of the pedicle necessitated. As regards the action of alcohol on the polypus, it is probably a double one. These growths are very oedematous, and consequently a large proportion of their bulk consists of water. Alcohol has the property of abstracting this, and thus probably tends to diminish the size of the morbid growths. It also has the property of coagulating albumen, and it seems quite possible that it may thus act in some way as a check upon cell growth, but of this action it is difficult to speak with certainty. (Dr. P. McBride, p. 241.)

Politzer recommends rectified spirits of wine as the best remedy for polypus, or granular growths in the outer or middle ear, as more certain in action and involving fewer disadvantages than solutions of acetate of lead, or muriate of iron so commonly used. The ear must first be cleared of secretion by the injection of lukewarm water: if there be suppuration of the middle ear the Eustachian tube must be inflated to drive the pus into the external meatus. The parts



should be carefully dried, and the head is then to be turned over to one side and a spoonful of slightly warmed spirit poured into the ear, where it should be allowed to remain ten or fifteen minutes. This is done three times daily. The spirit produces a slight burning sensation in the ear: if acute pain be excited, weaker solutions must at first be employed, and afterwards the stronger preparation. The alcohol first whitens the granulations by coagulating the mucus which lies on the surface; and subsequently penetrates the tissues, producing coagulation in the vessels and thereby leading to the shrinking of the new formations. The time occupied by the treatment varies from a few days to several weeks, or occasionally months. The soft round cell polypi yield most rapidly, the firm fibrous kind more slowly: nevertheless, many even of the latter variety disappear completely and leave no trace behind. Politzer has used alcohol in the above way for two years, and gives the following as the conditions in which it will be found most useful:—(1) In the treatment of the remains of polypi which cannot be removed by operative means, and which are situated in the outer auditory meatus, or the membrana tympani, or more particularly in the tympanic cavity. (2) In cases of multiple granulations in the external ear and on the membrana tympani. (3) In cases of diffuse hypertrophy of the mucous membrane of the middle ear. (4) In cases in which the removal of growths by instruments is prevented by mechanical obstacles in the external meatus. (5) In the treatment of children and nervous patients in whom an operation could be undertaken only with the aid of anæsthetics. (Glasgow Medical Journal, Nov. p. 123.)

**CATARACT.**—*The After Treatment.*—In private practice I invariably operate at, or soon after 9 a.m., a time that, I think, presents several advantages. Through a large part of the year the light is good. The patient has had more or less sleep, and is fresher than at any other time of the day; has no clothes to take off, but need only have a blanket spread on a firm couch and a dressing-gown placed over his shoulders. If an anæsthetic be taken, the early morning is by far the best time for its administration, since the stomach is empty and the absolute quantity of blood in the vessels less, so that a much smaller quantity of the vapour need be inhaled; which has the double advantage that the system is not so much depressed and sickness is less likely to occur. Immediately after the completion of the operation a piece of fine dry cambric is placed over each eye, and a light calico bandage, about two inches in width and one and a half

yards long, is passed twice round the head and brought over the vertex, its position being secured by pins or a few stitches. The patient sometimes remains asleep for an hour or two, but sometimes awakes almost immediately, and in either case is not removed from the sofa. A little food is directed to be given about midday, and this should consist of cold milk, which, if there is any tendency to vomiting, should be iced. If milk is objected to, beef-tea or a cup of tea or coffee and soft bread may be given. In the course of two or three hours, if there be no sickness, he may be put to bed and will probably sleep. Some smarting pain is usually experienced, but this gradually subsides; and I am in general averse to prescribing any preparation of opium. (Mr. Henry Power, p. 228.)

EYE AFFECTIONS.—*Atropine Salicylas*.—The salicylate of atropine is recommended by Dr. Tichborne. It is soluble in twenty parts of water, does not undergo any change by exposure to air, and possesses the great advantage of not producing any irritation when applied to the eye. (Ferris and Co.'s Notes on New Medicines, p. 69.)

SCLEROTOMY.—*New Method of Performing*.—Galezowski (Rec. d'Ophth., July) describes a method of performing sclerotomy which he has employed in six cases. The operation as performed by Wecker, Quaglino, and others, does not appear to have been hitherto more successful than iridectomy, and has frequently altogether failed in arresting the glaucomatous process. Galezowski believes that this want of success is owing to the method not fulfilling permanently the most important indication, viz., the re-establishment of the means of filtration from the anterior chamber. On the contrary, the cicatricial tissue formed must tend to block up the channels through which filtration is effected. He considers that in order to make the opening up of the angle of the anterior chamber more complete, it must be attacked from several different directions. His method, to which he gives the name of *scleriotomie cruciale*, is performed as follows:—A Græfe's knife is introduced through the sclerotic at about 3 to 4 mm. from the border of the cornea, pushed forwards towards the anterior chamber, and the sclerotic and cornea incised from behind forward to the distance of 1 ctm.; this is repeated at a point opposite the first incision, as well as at two points at right angles to it; the section is thus made in four situations. Eserine is used immediately after the operation, and a compress applied to the eye. The result of this method has been satisfactory in his hands, especially as compared with iridectomy on the other eye. The tension is so much reduced by it that it is



not suitable for cases of hemorrhagic glaucoma ; indeed, in one case it failed owing to hemorrhage, and the eye had afterwards to be removed. (Edin. Med. Jour., Dec., p. 571.)

---

### MIDWIFERY, ETC.

**DYSMENORRHOEA.**—In a case of dysmenorrhœa from mechanical obstruction there is little hope of relief unless by some mechanical or operative treatment. How shall we remove obstruction ? By dilating the narrow os externum uteri, and by remedying flexion. If there is flexion only the treatment will, in the first place, be simply limited to restoring the uterus to its proper form and position. We will now consider how to deal with stenosis, and we have first to determine the exact seat of the stenosis. This, I believe, to be almost always at the os uteri externum. The only kind of assent I could give to incision at the os internum would be to make a very slight nick, so as to divide the mucous membrane and some of the superficial circular fibres of the muscular coat. This may allay spasmodic sphincteric action. But I give even this qualified assent with considerable reserve, believing that the cases where it might be useful are rare. Of course, I am now speaking only of cases of dysmenorrhœa from stenosis. Freer incisions are sometimes eminently useful in severe metrorrhagia with fibrous growths. Almost then excluding incisions of the os internum, we may turn to the modes of dealing with the os externum. And we may first dispose of the alternative method of dilating by bougies, laminaria tents, and various expanding instruments. This proceeding is free from the risk of bleeding. If cautiously pursued there is not much danger of any kind. But if often repeated it becomes exceedingly harassing to the patient ; the action of the laminaria tent is commonly very painful, vomiting often attends the expansion. After a time, usually very short, the canal will have returned to its pristine narrowing, and the proceeding has to be repeated again and again. To a certain extent the same objections apply to dilatation by graduated bougies, and other dilators. The pain is less, the regulation is more delicate, but the gain is not more enduring. Thus I have known not a few cases in which this kind of dilatation had been practised, at short intervals, over a period of twelve months or more, without any compensating gain. Then there is the method of rapid dilatation. This is effected by instruments made with expanding or diverging blades on the principle of similar instruments devised for the urethra. This method is occasionally useful. The objections are that it hardly applies to the cases under discussion ; that



it is very painful unless anæsthesia be induced ; that the gain is transitory ; and that it entails no slight risk of metritis. Indeed, no mode of bloodless dilatation is free from this last danger. Instrumental dilatation, whether gradual or rapid, involves some degree of violence, and the penalty may be inflammation—that is, metritis, pelvic cellulitis or peritonitis. Not rejecting these methods of dilatation, least of all that by bougies, I can only accord them a secondary place. The strictly limited incision of the os externum as I practise it, very nearly resembling the “discission” of the late Dr. Peaslee of New York, is at once less painful, more rapid, more certain and more safe. I need not dwell long upon the operation. You have so many opportunities of seeing it done that description is unnecessary. It consists simply in enlarging to a very moderate extent the os externum by help of a pair of scissors constructed *ad hoc*, one blade terminated by a probe-end, which enters the os, the other blade terminated by a hook, which seizes and fixes the vaginal portion at the point desired. One stroke of the scissors divides the intervening tissue in a straight line. The proceeding is then repeated on the other side of the os, and the operation is completed. There is a tendency to contract again after the operation. To meet this a variety of intra-uterine pessaries or stems have been devised. A modification of the late Dr. Wright's is the best. The principle of this lies in the divergence of the two halves of the intra-uterine portion by elasticity so as to maintain itself *in situ*. It is made of one piece of vulcanite. The next I should prefer is Meadows' glass stem. Both these are perfectly clean, and little apt to cause foul discharge. (Dr. R. Barnes, p. 286.)

*Croton Chloral versus Alcohol*—In the peculiarly painful spasm which attends the menstrual period in some women, and which becomes neuralgic in its character, I do not deny for a moment that a full dose of alcohol—a very full dose—often repeated, relaxes, and so brings relief. But, perhaps, never was so much evil bought at the price of this temporary good as in these examples. Possibly the juniper which is present in gin might be, in some degree, useful. Juniper increases the secretion from the kidney like ethyl nitrite, and might be worth using, apart from the idea of gin. I have, therefore, given it in combination with croton chloral in proportion of three minims of the oil with two grains of the croton chloral made into a draught with glycerine and water. This answers exceedingly well, and I press its use earnestly. The formula stands as follows:—Croton chloral, gr. ij.; oil of juniper, ℥iij.; glycerine, ʒj., distilled water, ʒjss. To

make a draught. To be taken when in great pain, and repeated every five or six hours until relief is obtained. (Dr. B. W. Richardson, Med. Press and Circular, Jan. 19, p. 43.)

**ECZEMA PUDENDI.**—*Saccharine Urine.*—The glycosuria which is met with in the latter half of life is neither uncommon nor always serious; it is apt to be associated with very irritable and obstinate eczema, and in women the saccharine urine acts in addition as a *local* irritant, and makes the eczema about the pudendum almost intolerable; indeed, excessive and intractable irritation in this region in middle-aged women is very commonly associated with sugar in the urine, and is often incurable as long as much sugar remains. I wish especially to draw attention to the fact that the eczema and the sugar in this class of cases are mainly due to *over-feeding*. I use the term in its broadest sense, and include quality as well as quantity of food. I frequently meet with cases of intractable eczema pudendi in women past middle life, of sedentary habits, and eating three large meat meals a day, and trying by all means in their power to stimulate their appetite under the erroneous impression that they are “keeping up their strength.” Now, in these and similar cases, medicine and local treatment are almost equally useless, unless there is, at the same time, a thorough reform in the diet. The first point is to deprive the patients of sugar as an article of food, except just enough to make light puddings palatable. The reason for this is that much of the sugar passes the liver unchanged, and is therefore worse than useless as a food. The next point is greatly to reduce the animal food, especially mutton and beef, and to substitute for it simple clear soup, and poultry or fish in moderate quantity once a day. Lastly, the chief part of the daily diet should be made up of light farinaceous and milk food, such as bread, rice, and macaroni. (Dr. R. Liveing, p. 267.)

**LONG versus SHORT MIDWIFERY FORCEPS.**—The long double-curved forceps stands prominently forward, as the instrument of all others, scientifically fitted to meet the requirements of the obstetric surgeon. To compare the long and the short forceps together is to compare things completely incongruous; the one being an instrument almost perfect in its power of scientific adaptation; the other being essentially useless. Again, though so small and handy-looking, the short instrument is really not of so easy application, for ordinary cases, as the long double-curved forceps. The pelvic curve in the long instrument makes its application, even in the middle of the bed, a matter of little or no difficulty. This pelvic curve also does away with the necessity of paying



such strict attention to the position of the head, for the blades, of course, must be placed in one or other of the oblique diameters, and nearly parallel with the sides of the pelvis. It is in this position the blades have most room, and they naturally and easily glide into these spaces in the ordinary presentations. A purely lateral grasp of the head is still taught and practised by some, but the oblique grasp of head was long ago pointed out by Smellie, insisted on by Simpson, and is still taught by Barnes, Playfair and other leaders in the art. An apparent exception to this rule is of course found in cases where the head is quite down on the perineum, and in the ordinary position of face looking directly backwards to the sacrum. Here, the grasp, as a rule, is more on the lateral aspects of the head, one blade being before one ear, the other behind the opposite one. Like others, I have applied the blades transversely—*i.e.*, over the ears of the child—in order to rotate in cases of occipito-posterior position where, from some cause, natural rotation into occipito-anterior position had been arrested. This I now believe to be seldom necessary, as the pelvic curve in Simpson's long forceps (the instrument I chiefly use) is so slight, that *traction alone with the oblique grasp* will bring the head into its proper position. (Dr. J. More, p. 275.)

LABOUR.—*Effects of the Induced Current Upon.*—It is not an uncommon occurrence to meet with cases of confinements in which it seems likely that the child will be born in a few minutes, and yet there is a delay owing to the pains being very short, feeble, and at long intervals, although the mother shows no sign of fatigue. In these instances ergot might be of use, but it is not administered because it is expected that before it has time to act the labour would be over. Having met with three similar cases almost consecutively, I came to the conclusion that electricity might be of use. In one case the pains were weak, and at intervals of rather more than ten minutes. The membranes were ruptured, and the terminals of the induction coil placed one upon either side upon the motor points, and the current was only turned on during the pains. After she had three the pains became almost incessant, and they never ceased until the current was stopped. Although the contractions were violent she did not feel them so acutely as before the coil was applied. The child was soon born, and under the influence of the current the placenta was expelled forcibly outside the vulva. She had an excellent getting up, having very few after-pains. This case illustrates another frequent occurrence—namely,



that *the pains do not cease until the current is discontinued*; more frequently, however, although the pains become very prolonged, they stop of their own accord. If it be wished merely to prolong any one uterine contraction, the current is best applied near the termination of the pain, when it will commence *de novo*. (Dr. W. J. Kilner, p. 271.)

*Ether versus Chloroform in Parturition*.—I give ether whenever the patient desires it, and often persuade her to have it, finding that after it the uterus always contracts well, as theoretically it should do, and rarely require to use more than an ounce of ether. I give it simply on a sponge wrapped in a towel, and am unable to account for parturient women requiring so small a quantity; but such I have found the case. (Dr. W. Peel Nesbitt, Brit. Med. Journal, Mar. 19, p. 429.)

○**VARIOTOMY**.—The objections urged against the ligature were, chiefly, that it was not so safe as the clamp, that it was likely to cause pelvic abscess, and that it might become the source of hemocele from the escape of blood at the menstrual periods. The danger of the ligature as compared with the clamp was imaginary, and is not now heard of; and, so far as my experience goes, the fear of abscess was equally unfounded. In one case, where both ovaries were removed, there were no fewer than seven ligatures on one pedicle and three on the other. Both pedicles were very short, and the inner ligatures actually included the respective cornua of the uterus. All this complicated tying was inevitable, as, on the right side, the tumour dipped deep down by the side of the uterus, so that the line of ligatures formed a curve, with its concavity looking upwards. Here, if ever, one might expect mischief, but no abscess formed; on the contrary, so little evidence of irritation was there, and so rapid was the convalescence after so severe an operation, that the patient left the hospital on the twenty-eighth day, and at the present time is in excellent health. I have now the satisfaction of seeing the clamp almost abandoned, and its place taken by the ligature. The reason assigned for this is the adoption of the “antiseptic system,” which is thought to be incompatible with the clamp, and to render the ligature safer. Here it is worthy of notice that, while one party is putting forward the antiseptic system as the explanation of their greater success, we find, on the other hand, Mr. Lawson Tait reversing the proposition, and urging that this supposed antiseptic success is due to the coincident use of the ligature. As for myself, I am not prepared to assent to the doctrine that the antiseptic system does enable me to carry out the intraperitoneal method (ligature) with greater safety. The fact of the

disuse of the clamp alone concerns me, and not the reasons given for it, regarding which there is room for difference of opinion. The only method that is truly in rivalry with the ligature is the actual cautery. Remembering the excellent results obtained with it by Baker Brown and Keith, and that Wells's cases, so far as they go, are in favour of it, and although desirous of completing a hundred cases with the ligature, I have several times made arrangements to try it; but, as often as I have done so, I have encountered a very short pedicle, with no room for the clamp between the tumour and the uterine cornu. Thus it has happened that my third case remains the solitary example of the use of the cautery in my practice. Listerism may be considerably modified, to such an extent, indeed, as no longer to secure the acknowledgment of its author, not only without worse, but with better results. How far this modifying process may be carried remains to be seen. Whether we shall arrive at the contradictory position of Thiersch, who, believing "Listerism" to be theoretically perfect, yet prefers to use salicylic acid instead of carbolic acid, as less irritating, etc.; or like Galezowski, raise a laugh at the whole system by vaunting the virtues of a solution of carbolic acid, containing a thousandth part; or steering that middle course which is proverbially the safest, settle down to a modified practice, something in the form of a purifying irrigation, the result of experience tempered by common sense, the future alone can determine. That the carbolic acid in the proportion and in the manner prescribed by Lister is a necessity few will now contend, any more than they can dispute the disadvantage of the chill from the spray in ovariectomy; but that the cleanliness which is thus attainable, viz., by the spray and frequent ablutions, plays an important part, few will deny. The "antiseptic system" may not irreverently be called "the gospel of cleanliness," for where there is perfect cleanliness there can be no septic process. I have faith in the virtue of cleanliness, but I do not believe in the specific antiseptic properties of carbolic acid thus applied. "The practice has been founded on a theory which has not been proven, and is probably not true." Though I fear this explanation will be far from satisfying the originator of the system, yet I cannot but believe and feel that, if there be found more truth in it than he would be now willing to admit, Mr. Lister will still hold a place amongst one of the benefactors of his age. (Dr. George Bantock, Surgeon to the Samaritan Hospital, British Med. Journal, Jan. 22, p. 112.)



**PROLAPSE OF UTERUS AND BLADDER.**—*Perineal Restoration for Relief of.*—In a case of prolapse of uterus and bladder the following operation was performed with ultimate success. On 12th August, chloroform having been administered, Dr. Reid proceeded to operate. A triangular flap of mucous membrane was first dissected from the posterior wall of the vagina with its apex downwards and the base about  $1\frac{1}{2}$  in. up the vagina. The edges of the labia majora were then rawed, a strip of membrane about half-an-inch broad being dissected off as far forward as the urethra. The flap of mucous membrane first formed was then drawn forwards with the apex towards the urethra (the mucous surface being thus towards the vagina, and forming a floor to it), and the edges united to the mucous edges of the rawed surfaces with silk sutures. The opposing rawed surfaces of the labia were brought together by sutures of silver wire, the ends of which were guarded by india-rubber tubing. During the operation, a stream of carbolic acid solution, 1 to 40, was kept flowing over the parts. The parts operated upon quite consolidated, and the previously prolapsed organs were perfectly retained within the vagina, no external support being needed. (Glasgow Med. Jour., Dec. 1880, p. 304.)

**PRURITUS VULVÆ.**—Many cases of pruritus vulvæ are promptly relieved by a borax lotion, and it is well to use this simple and efficacious remedy where not contraindicated. A drachm to five ounces of warm water is a good standard strength, but a stronger solution is usually needed, seldom a weaker. Hydrocyanic acid may be added—say 3 j. of the dilute acid to 3 x., or morphia (gr. ij.), atropia (gr.  $\frac{1}{2}$ ), aconitia (gr.  $\frac{1}{2}$ ), or veratria (gr.  $\frac{1}{2}$ ). Infusion of tobacco (half an ounce to the pint) alone relieves some cases, and forms a good vehicle for borax or boracic acid. It is not well to use glycerine with the borax as a rule, as it is apt, owing to its affinity for water, to aggravate the irritation. Some find relief from choral lotions, but the drug has not always suited. Strong decoction of poppy is a soothing vehicle for borax, &c. Ice alone will relieve some; while others can get relief only from the use of very hot water. In excessively severe cases, the ether-spray might be tried. Boracic acid is an excellent remedy; but, being much less soluble in water than borax, it is not so handy as a lotion. It may be combined with hydrocyanic acid, morphia, atropia, aconitia, veratria, &c. In the form of ointment, where fats do not disagree, it often soothes greatly. A non-rancid fat should alone be employed as the vehicle, *e. g.*, freshly made spermaceti cerate, vaseline, fossiline, or purified benzoated lard, &c. (Dr. Arthur Wiltshire, p. 279.)



**SPONGE TENTS.**—At the meeting of the American Medical Association, Dr. Cole said that in gynecological practice it was conceded by all that it was sometimes necessary to dilate the os and cervix uteri. The sponge-tent he considered better than all others used for this purpose, for the reason that none of the others could be made to remain *in situ*. As to the sponge-tent, its forms and mode of preparation were exceedingly various. The objections to those commonly kept in the shops were these. 1. They were not of the proper size or shape, generally being altogether too large. 2. They were apt to be made of a very coarse quality of sponge, and hence the dilatation could not be carried to the extent desired. 3. The sponge-tents, as usually prepared, gave a great deal of unnecessary pain on account of their coarseness and roughness. Instead of employing these, therefore, he made his own tents out of fine cup-sponge, such as surgeons used. The sponge was dipped in melted wax, and then subjected to great pressure (which could best be secured by a letter-press) which forced all the superfluous wax out of the sponge, and flattened it out to a thin cake. It was very necessary in selecting the sponge employed, that it should be entirely free from all mineral impurities. After being pressed out in this way, the sponge could then be cut with the knife or scissors into any shape desired, care being taken to cut it in the direction of its long axis. In many instances, it was necessary to begin with a tent not larger than a knitting-needle. Before using, it should be provided with a thread by which it could be removed. (Dr. Cole, London Medical Record, Nov. 15, p. 459.)

**VOMITING OF PREGNANCY.**—*Ingluvin.*—This preparation, much lauded by American authors for its power of arresting the vomiting of pregnancy, deserves, so far as I have been able to judge from a careful and constant use of it in many dyspeptic cases, a very much wider trial than has yet been accorded it. In the vomiting of pregnancy, it has seemed to me, given before meals in doses gradually increased from five grains to a scruple, to act more especially well in those cases in which a certain degree of anæmia was present. My experience has been that, where marked plethora exists, or a full habit of body obtains, the effect of ingluvin is very uncertain, and is not maintained after the drug is withdrawn or the dose lessened. But for the anæmic, and particularly in first pregnancies, it may be said to act now and then like a charm. I do not myself find that the best way to give it is before *each* meal, or that it is necessary that it should be taken three times a day. I believe the following to be the best method to adopt. As early as possible—say 5 a.m. or

6 a.m.—a commencing dose (ten grains) is given in water; at 8 a.m. or 9 a.m., fifteen more grains are given; and an hour after this second dose a breakfast of iced soda-water and milk with dry toast is taken. That finishes the day's drug taking. On the second morning, fifteen grains are given very early, and twenty grains three or four hours subsequently (again before food); and on the third day, two twenty-grain doses at the same hours. I then drop the dose—for by this time (as, in my experience, the drug acts quickly) the vomiting will have lessened—to ten grains before each meal for three more days; and I then stop the administration of the powder altogether. (Dr. G. H. R. Dabbs, p. 319.)

---

### MISCELLANEA.

ANTIDOTES.—(From the Allgemeine Wiener Medizin. Zeitung.)

*Morphia*.—Sulphate of copper one gram, distilled water, forty grams, for an emetic; half to be taken at once, the remainder in five minutes; if necessary. To be followed by strong coffee, and then every five minutes by tablespoonful doses of a mixture made by dissolving four grams of tannic acid in fifty grams of simple syrup.

*Opium*.—*Veratrica*.—*Savin*.—As for morphia.

*Fungus Poisoning*.—As for morphia.

*Stramonium*.—As for opium. May be followed by a hypodermic injection of morphia.

*Nicotin*.—In the sickness resulting from tobacco-smoking, vinegar fifty grams, simple syrup fifty grams, water 200 grams; half to be taken at once, and then a tablespoonful every five minutes. For accidental poisoning by *nicotin*, the same as for morphia; also tannic acid four grams, syrup fifty grams, distilled water 200 grams; a tablespoonful every five minutes.

*Phosphorus*, sulphate of copper one gram, distilled water forty grams; half to be taken at once, the rest in five minutes, if necessary. Then oil of turpentine thirty grams, white and yolk of two eggs, simple syrup fifty grams, peppermint water 250 grams; for an emulsion to be well shaken, one tablespoonful every half-hour until a fourth part has been taken, and then a tablespoonful every hour.

*Burns by Phosphorus*.—Nitrate of silver two grams, distilled water twenty grams; to be used as a lotion.

*Petroleum*.—Oily and mucilaginous drinks taken frequently.

*Lunar Caustic*.—Common salt twenty grams, water 300 grams; half to be taken at once, then a tablespoonful every hour with oily mucilaginous drinks.

*Strychnia*.—Tannic acid three grams, syrup of marsh mallow sixty grams, distilled water 140 grams; a table-



spoonful every five minutes. Then choral hydrate four grams, distilled water 100 grams; a tablespoonful every half-hour.

*Sausage-poisoning and Poisoning by Decomposing Meat.*—Sulphate of copper one gram, distilled water forty grams; for an emetic, half to be taken at once, and the remainder in five minutes, if necessary. With this may be given ether two grams, tincture of opium ten drops, distilled water 150 grams; a tablespoonful every half-hour.

*Ergot.*—As for sausage-poisoning.—(Med. Record, Oct. 15.)

**BROMIDE OF ETHYL AS AN ANÆSTHETIC.**—In the *Detroit Lancet*, Dr. Isaac Ott publishes some experimental investigations of his own on the physiological action of the new anæsthetic, the bromide of ethyl. Comparing it with other anæsthetics in use he says:—(a) Chloroform increases the pulse, then slows it by a cardiac inhibitory stimulation; ether increases the pulse; nitrous oxide also increases it by paralysis of cardiac inhibitory apparatus; whilst bromide of ethyl increases the pulse by an action on the heart itself. (b) Chloroform reduces the blood-pressure by paralysis of the main vasomotor centre and cardiac debility; ether greatly increases it and keeps it increased; and nitrous oxide also increases it; bromide of ethyl increases it either by a stimulation of the spinal or peripheral vasomotor system. (c) Chloroform increases and then decreases respiration; nitrous oxide reduces it; bromide of ethyl decreases it by a central action. The author draws the following conclusions:—1. Bromide of ethyl, either by inhalation or subcutaneous use, kills by a toxic action on the centres of respiration. 2. That the decrease of force and frequency of the heart contributes to the paralysis of the respiratory centres. 3. That injections of ethyl into the jugular toward the heart kill by cardiac arrest, probably due to an action on the cardiac muscle. 4. Bromide of ethyl in toxic doses depresses momentarily the frequency of the heart, which is followed by a subsequent rise to normal rate. 5. Bromide of ethyl in toxic doses depresses the arterial tension, due in major part to the depressant action of the drug upon the heart, and in minor part to a partial loss of tone of either the spinal vasomotor centres or the peripheral vasomotor system. 6. The inhibitory power of the pneumogastric is not paralysed.

**NEW CLINICAL THERMOGRAPH.**—This is one of the most scientific and interesting instruments which has appeared for some time. It has been brought out by Messrs. Salt and Son, of Birmingham, and is the invention of Mr. W. D. Bowkett, of the Leeds Fever Hospital. Description and diagrams will be found at page 311.



# PRACTICAL MEDICINE.

---

## DISEASES AFFECTING THE SYSTEM GENERALLY.

---

### ART. 1.—ON TYPHUS FEVER AND ITS TREATMENT.

By Dr. R. FITZMAURICE, Physician to the County Kerry  
Fever Hospital.

It is generally admitted that the red corpuscles of the blood are the carriers of oxygen, and that the iron contained in the hæmatin is intimately connected with this process—experiment showing that on separating the iron from the hæmatin it loses its power of combining with oxygen. It is also admitted that the dark colour of venous blood is due more to the absence of oxygen than to the presence of carbonic acid, and that the blood becomes dark also from the fulness of the corpuscles. It is also shown by experiment that the blood remains fluid longer in the capillaries than in the large vessels, and from these facts we may be justified in assuming that the dark rash of typhus, which always indicates a bad case, depends rather on a low state of blood, or on blood that contains less oxygen, than on virulence of poison or accumulation of it. It seems to me that when a dark rash appears the blood is in such a state as to render it an easy prey to the typhus poison, and that when the poison comes in contact with such blood it disorganises it easily, probably by the abstraction of oxygen, and the blood, being possibly more fluid, freely exudes and gives rise to an abundant and dark-coloured rash. In the operation of vaccination this difference of blood is often seen. In the poorly-fed children that live in unhealthy lanes the slightest scratch brings dark-coloured and very fluid blood, whereas in healthy country children quite the opposite obtains—the blood being bright red, and not so thin or fluid. From these preliminary remarks it may be inferred that my view of the action of the typhus poison differs from that which is generally received. The accepted theory supposes that the poison, on entering the blood, acts in the way of catalysis, or as a ferment, reproducing itself, causing disintegration of tissue, and giving rise to compounds which, being reabsorbed, poison the nervous centres—the process of disintegration or metamorphosis overbalancing that of elimination, and this state being attended with increased temperature, which is supposed to depend on increased combustion. This theory, though plausible, may be incorrect, and, if so, the treatment founded

on it must also be erroneous. I am not inclined to say decidedly that this theory is wrong, which would be too sweeping an assertion, but I have reason, from experience, to doubt its accuracy, and to substitute another which may appear as visionary, and yet be less fallacious. It is—that the primary action of the poison is on the red corpuscles; that it abstracts oxygen, and may possibly form compounds that give rise to increased temperature; that this blood deprived, to a certain extent, of oxygen, is unfit to stimulate the nervous centres, and the result is the serious and nervous symptoms which are observable in bad typhus, and which appear to depend on withdrawal of nervous power or perverted nervous action. According to this view, the object of treatment ought to be to supply to the blood the element which nature has selected to assist in carrying on one of its most important functions—namely, the transmission of oxygen to the tissues, and especially to the nervous centres, and this remedy is found in iron.

Regarding stimulants, our great observers have recommended much caution in their administration, but this advice appears to be often disregarded, and occasionally by some of themselves, as in some of the examples given in their books alcohol is given very freely, although intense nervous symptoms continue unabated to the end. I think the cases in which stimulants are admissible are very exceptional, and I believe the grounds for giving them are wrongly chosen; the weak, rapid, and sometimes intermitting pulse, with loss of first sound and impulse of heart, or foetal heart sounds, with which are always associated severe nervous symptoms, is a case in which stimulants are generally freely given, on the supposition that the circulation is failing and that there is impending danger; but I think this treatment exhibits temerity and want of judgment, as it seems to me that these symptoms, when there is no evidence of collapse, depend on a nervous impression causing withdrawal probably of nervous power or perverted nervous action, and the indication of treatment in such cases should be to restore the nervous equilibrium by sedatives, counter-irritation of the scalp and back of neck, the administration of iron, and nourishing and unstimulating fluids, always keeping in view the crisis, and that no decided improvement can take place before the thirteenth or fourteenth day. It cannot be denied that some bad cases of typhus bear stimulants well, but my experience is that they should be given with great caution, and only at first a tablespoonful of wine and water every third hour or so, and even then watching closely its effects. The case that seems to me to be most benefited by stimulants, at the same time that the head is blistered, is that in which there is a torpid and silent state, with slow pulse, debility, and sleeplessness without



excitement; and I am of opinion, though opposed to the experience of some, that stimulants are essential to rapid recovery in the convalescing stage.

When the temperature of typhus runs high with other bad symptoms it is a bad omen, but I have occasionally seen a rise of temperature to  $105^{\circ}$  in young girls without a bad symptom, and I have seen the temperature from  $101^{\circ}$  to  $105^{\circ}$  in some of the worst cases, so that though the clinical thermometer is to a certain extent useful in the course of typhus, and of aid in diagnosis, it cannot be depended upon for prognosis. I think it is a mistake to endeavour, by iced drinks and other remedies, to reduce directly the temperature, as the increase of it may be a manifestation of the efforts of nature to eliminate the poison, and we may be counteracting this action by giving digitalis, quinine, &c. We know that when organs are engaged in active secretion there is increased influx of blood, and this is attended with some increase of temperature, and it may be unwise to use special temperature-reducing remedies, which may interfere with other vital actions. I find sponging the body with tepid vinegar and water three times a day not only grateful to the patient but useful in causing action of the skin and preventing increase of temperature; but digitalis, when given with this latter intention, I have only faith in to do harm.

The diarrhoea of typhus should not be interfered with at first, but if it continues for some days it may be moderated with chalk mixture and catechu; if this is not effectual it may be supplemented with a powder containing  $\frac{1}{4}$  of a grain of grey and three of Dover's powder, three times a day. If the diarrhoea continues, 4 grs. of Dover's powder may be given night and morning; and if not lessened, laudanum and turpentine in the following mixture will be found useful:—℞. Spt. terebinth., 3 iss.; vitelli ovi, q.s. Misce et adde tr. opii, 3 iss.; syrup., 3 iv.; aquæ cinnamomi, 3 vj. Ft. mistura. St. cochl. i. mag. ter die. If this fails we must have recourse to acetate of lead, and as a last resource, an enema of starch and opium. In headache in the beginning of typhus a leech to each temple will be found useful, and 4 grs. of Dover's powder night and morning. If it continues, and is unabated, I find that blistering the scalp has a good effect. It is a good rule, in all cases of typhus, to cut off all the hair early in the disease. For sleeplessness, 4 grs. of Dover's powder, to be repeated in an hour; if the insomnia continues, tr. hyoscyam. and bromide of potassium; and, after some time, laudanum or morphia, which should be deferred till other treatment failed. Changing a patient to a fresh bed once or twice a day has a very good effect, and it is often necessary to blister the head.

Excluding mild cases of typhus, which require little or no



medical treatment, and the maniacal case with strong pulse which may be knocked down at once with chloral and bromide of potassium, I append a case often met with which will more clearly illustrate the observations given above. In the second week of *bad* typhus the following train of symptoms, more or less modified, will be met with:—Dark and abundant rash; suffused eye; pupils natural, sometimes fixed upwards; wakefulness, delirium, subsultus tendinum, folding up or picking bed-clothes; brown, dry tongue, or soft and white; pulse weak, compressible, and rapid, from 130 to 140, and sometimes intermitting, without signs of collapse; foetal heart sounds, or loss of first sound and impulse; respiration from 48 to 52, temperature from 101° to 105°, incontinence or retention of urine, involuntary discharges from the bowels or constipation, belly either tympanitic or flat. This state of pulse and heart, &c., decides at once for stimulants; and consequently a tablespoonful of wine is ordered every hour, with the ordinary milk, beef-tea, and acid treatment, and some antispasmodics or sedatives. At the next visit, in four or six hours, the pulse will be found about the same, probably quicker, the patient more fidgety, no sleep, an approach to contracted pupils, and not improved in any respect. The next thing often done is to substitute brandy, or brandy and egg mixture, for wine, to bring up the pulse and support the failing circulation; and with what effect?—that this treatment, if continued for eight or ten hours, is likely never to be counteracted, and the nervous symptoms to be aggravated to the fatal result. What, then, should be the treatment in such a case? No stimulants—milk, beef-tea, and milk only if the bowels are too free; scalp and back of neck to be blistered immediately, iron given, and 4 grs. of Dover's powder, to be repeated in an hour if the patient does not sleep. Strangury often occurs from the blister, shown by moaning on the part of the patient, and moving the hands towards the genitals; and then the following draughts will be found useful, not only for this, but for the wakefulness that is present:—R. Bicarb. potas., grs. 15; tr. hyoscyam., 3 i.; syrup., 3 iv.; aquæ ad 3 i. Ft. haust. Mitte sex. One every hour, with large quantity of barley-tea. Dilatation of the pupils occurs after taking four or five of these draughts; and on next visit, in about twelve hours, the pulse will often be found to have regained its force and fulness, though continuing quick as before—the weakened state depending not on failure of the circulation, but on an impression made on the nervous centres. The more stimulants are given in such a case the more marked will be the debility and the more excessive the excitement. Though the patient is quieter the wakefulness often continues, and for this we may repeat the Dover's powder, and if not effectual it pre-

pare the patient for some more potent remedy. Neither opium, nor digitalis, nor chloral is admissible for the first twenty-four hours; but as we must expect till crisis an uncertain state, the insomnia often continues or returns, and the pulse begins to fail again, and the pupils from want of sleep become contracted. The treatment then is 35 or 40 minims of laudanum in a table-spoonful of wine, which is often effectual, and which under any circumstances should not be repeated for six or eight hours. When the patient falls into a sleep he should not be disturbed for four or six hours, at times feeling his pulse to watch signs of collapse. For complications and a more full description of treatment, the reader may consult Hudson's Lectures and the comprehensive and unrivalled monograph of Murchison.—*Dublin Journal of Medical Science*, Oct. 1880, p. 307.

---

## 2.—ON TYPHOID FEVER.

By Dr. HENRY KENNEDY, A.B., Physician to Simpson's Hospital and the Whitworth Hospital, Drumcondra, Ireland.

Has the constitution of individuals in whom typhoid fever occurs been sufficiently recognised? I think not. For a long period I have had the impression, which of late years has become a conviction, that this type of fever occurs chiefly in persons who, if not of a strumous constitution, are closely allied to that state. This opinion has not been hastily taken up, nor, as far as I know, has it been specially advanced in any of the standard works of the day, and yet it appears to me that a number of facts can be advanced in strong corroboration of it. Thus the number of individuals suffering from typhoid fever who have a very fine skin and a high colour in their cheeks is very remarkable. I think, too, it will be observed that their frame, and particularly the chest, are not what is considered as robust. Of course I speak only of the majority of instances, for exceptions do occur, but I believe them to be rare. In keeping with this form of body I need scarcely remind you of the important part which hemorrhages play in this type of fever. I admit that these hemorrhages are more frequent at some periods than others, but this does not shake the fact that in typhoid fever bleeding in one form or another constitutes an important phase in the natural history of the affection. But, again, nebulae on the corneae and chronic inflammation of the eyelids are frequently observed; and I have seen, again and again, marks of struma in the neck, which had evidently occurred in childhood. The point, too, of which I speak—that is, the close connexion between typhoid fever and the strumous diathesis—may be seen in a still more striking light. I have been asked to see a case of this fever



where, on inquiry, it turned out that two years previously the patient had symptoms of phthisis, including spitting of blood, and I have had to treat typhoid in a patient whom I knew at the time to be labouring under well-marked tubercular phthisis. In this view of the question the similarity of the lesions which occur in tubercular phthisis and enteric fever must not be forgotten; to my eye they seem to be of the very closest.

In the last place, I may remind you of the great frequency of the lung affection which occurs in enteric fever—the form which is now known as catarrhal pneumonia, and which so often ends in one of the forms of phthisis. Indeed some late writers—and conspicuously amongst them Niemeyer—have advanced the opinion that pneumonia is the starting-point of all phthisis. This I cannot for a moment concede. All I allow here is that in enteric fever a kind of pneumonia occurs which is apt to run into one of the forms of phthisis.

This view of the nature of enteric fever—or, more strictly, of the nature of the constitution in which it occurs—is, I believe, of much moment to recognise; for, if correct, it requires very little consideration to show the important bearing it must exercise on the diagnosis, prognosis, and, above all, the treatment. It must, in fact, affect every point in connexion with this type of fever. Thus, keeping this point in our minds, the diagnosis is rendered so much the easier, for, if in a doubtful case we observe any signs, constitutional or otherwise, of the strumous diathesis, we may be the more assured that the fever with which we have to deal is of the enteric type.

There is one aspect of this subject to which I would call special attention, and with which the present remarks have the closest connexion—I mean the way in which an attack of typhoid may begin. Thus, I have seen a number of cases where an attack of bronchitis—in some instances very acute—preceded the onset of the fever; and it was only after several days that the symptoms of enteric fever developed themselves, and sometimes very suddenly. It was curious, too, to observe in these cases that the commencement of the symptoms of the fever had the effect, or seemed to have the effect, of lessening the bronchitis. I saw one case in which it passed away entirely, and the enteric fever which followed was a very severe attack.

But, again, you are aware that many cases of typhoid fever are ushered in by gastric symptoms, often of a violent character. It is clearly to cases of this type that the term “gastro-enterite” has been applied, and it is worth noting that it is more common at some periods than others.

But why, it may be asked here, do I revert to these facts?—that is, to a bronchitis taking precedence, as it were, of an



attack of typhoid fever—to the marked implication at times of the stomach in the disease, and to the occurrence of a type of fever in which it becomes very difficult to say what type it is. My answer is, Such facts show us, in the first place, that typhoid fever is not the localised disease which many suppose it to be; and, secondly, that in dealing with it our views cannot be too enlarged. That man will surely be the greatest physician who has the widest knowledge of such facts as I have been stating, and which are nothing more or less than a knowledge of some of the facts which constitute the natural history of the affection.

There is no type of fever which appears to me to bear stimulants as well as typhoid. I am quite aware of the views held on this point by those who say none should be given, as well as those who, like the late Dr. Todd, gave them in very large quantities. Now, I am not going to speak of either of those views, but simply to state my conviction that the great majority of cases of this fever get on better by the use of stimulants than without them; and that by their agency the disease is shortened. My attention was forcibly drawn to this subject several years since, when what might fairly be called an epidemic of typhoid fever, amongst children, prevailed in the Cork-street Hospital. Many of these children lay, day after day, in their beds, without any appreciable change I could make out. At first I did not give any wine; but when I came to do so I could not fail to be struck with its effects—for it acted like magic. One or two ounces daily was all that was given. This naturally led me to give it to adults; nor, after a good deal of experience, have I had any reason to alter this practice. Not that I rush to the use of stimulants because I have a case of typhoid to treat; but that their use, at some period, is an established point with me. With the views I now hold of the nature of the constitution of the patient, and to which attention has already been directed in an earlier part of these remarks, the use of stimulants comes in well; for I hold that, as a general rule, which has very few exceptions, the strumous diathesis is benefited by their use. In those cases in which it seems doubtful whether stimulants should be used my rule is to begin with a very small quantity, and I have often, in this way, literally ordered only a teaspoonful of wine at a time for each dose.

The food given to the patient during the attack is a matter of considerable moment. My own impression is that it may very readily be overdone, and I have stated as much many years since; and probably there is no single food about which greater mistakes are made than in the use of milk, which many suppose may be given *ad libitum*. I cannot but consider this

as a very serious oversight, and it is a point which ever requires caution. It seems not to be recognised that many adults, even in rude health, will not bear milk, and to suppose that it will agree when fever is present is surely going further than any reason would justify. At any rate, whatever the reason be, certain it is milk frequently does harm—even given in what would be called moderate quantities and diluted, and I have myself seen many instances where its omission was at once followed by advantage. Whatever be my own individual opinions, however, I am very glad, on this particular point, to be able to quote the high authority of Sir W. Jenner, who—in the essay above referred to—dwells on this matter at some length, and goes the entire way in the views I myself hold. As he puts it, a pint of milk is equal to a mutton chop, and he urges, again and again, the need of great caution in the use of milk. More might be said on this point, but I must hasten on.

As to topical treatment to the abdomen, I would just remark that it does not seem to me to be of that decided character which very many cases of typhoid fever require. It is a very general custom to rest satisfied with the use of poultices and stupes, with or without turpentine or mustard. Now, I hesitate not to say that these do not, as a general rule, act so as to conquer the local disease or diseases with which we have to contend; and my own practice has been to use more decided remedies. Thus, when the attack is ushered in by severe vomiting—and this during the first week is common—I do not hesitate to advise two leeches to be applied over the stomach; nor do I know any single remedy which more frequently affords relief. I have them applied too, though in exceptional cases, over the cæcum and also with marked benefit. But whatever question may arise about the prudence of applying leeches, I have none whatever about the application of blisters, which I feel confident, prevent the occurrence of mischief within. In speaking with friends on this subject I am always told that turpentine stupes had been used. But I must say that no reddening of the surface can in my mind compare with the effects of a real blister; and I believe precious time is often lost by carrying out what I must call half-measures.

The same remarks apply, possibly with even greater force, to the treatment of the chest affections which complicate typhoid; and, unless I doubt my own senses, I cannot question the value of blisters—and these freely applied. I would not dwell on this point but that in Murchison's great work I do not find any allusion made to this practice in the treatment of typhoid fever.

The last point of practice to which I would ask your atten-



tion is in reference to the use of aperients. On this subject the extremes have been run into, just as in others, and some have advocated a very free use of medicines of this class, whilst others say they are not to be used at all. Now, I believe, with ordinary discretion, great and decided benefit follows their use; but I am now speaking more of the advanced stages of the disease. The fever is running on and on; there is still diarrhoea, and, it may be, some tympany. Under these circumstances an aperient often acts like a charm, and the one I am in the habit of using myself is the phosphate of soda. It very rarely disagrees, and it is mild in its action. It is worth noticing that, given at the stage I speak of, it frequently brings away a quantity of fæces, such as we could not, in any way, have been prepared for.

In making these remarks on treatment it will have been observed that they have been very unconnected, and numerous points have been, as it were, overlooked. All I wished to do was to speak of such points as I believe even yet admit of improvement, and these have been merely glanced at—not entered into at any length. Time would not have allowed of this.

As to the results of my experience and the practice founded on it, and carried out on the lines I have indicated, I may say they have been very satisfactory. I would not dare to say I have been more successful than others; but this much I may state—that my cases have been singularly free of relapses; and in this way the disease has been, as it were, shortened. My conviction is that, if treated from the first, typhoid fever will not run out as long as is commonly thought; but to attain this end it must be systematically treated. Let me, in conclusion, throw into a series of propositions the chief points brought forward in this paper:—

1. That the constitution in which typhoid fever occurs is very generally tainted with struma.
2. That a consideration of the morbid states found in the abdomen, not only in typhoid but in other fevers, accounts most satisfactorily for the varied phases which typhoid presents.
3. That as we have a distinct morbid lesion to contend with, our treatment should be regulated accordingly.
4. That wine, or other stimulant, should constitute a part of the treatment of typhoid fever.
5. That the use of milk in the treatment always demands special consideration.
6. That both leeches and blisters may be used with decided advantage, for either the abdominal or chest symptoms of typhoid.
7. That at an advanced stage of the disease aperients are



frequently of much benefit.—*Dublin Journal of Medical Science*, March 1881, p. 201.

### 3.—ON THE ANTIPYRETIC TREATMENT OF TYPHOID FEVER BY MEANS OF SODIUM SALICYLATE.

By Dr. HENRY TOMKINS, Medical Officer to the Monsall Fever Hospital, Manchester.

If, as is now generally held, all these so-called “zymotics” depend, as we have positive evidence some do, upon the presence within the body of a specific living poison, a true contagium vivum, having properties as distinct and powers of reproduction of its kind as perfect as any genera or species known to botanist or zoologist, then surely it is not an idea so very chimerical that we may have a specific remedy or antidote for each of these living toxic agents; and although I have no evidence to bring forward that sodium salicylate is a specific remedy, still we know that our most powerful agents for reducing the body heat are also powerful germicides and preventives of fermentation, quinine standing high on the list, and salicylate of soda still higher, 1 part in 20,000 of the latter sufficing to perfectly preserve saccharine fluids from fermentation, and to arrest the action of myrosin in mustard and other well-known fermentation processes. On this point also may be cited an experiment made last summer with the saliva of a rabid dog. Two others were inoculated from it, the one with saliva pure from the rabid animal, the other with the same to which 1000th part of salicylate was added. The former developed all the symptoms of a severe attack of rabies, and died on the thirteenth day; the other is still alive and well. And could we isolate the typhoid poison, or cultivate it apart from the body, as with some infective organisms, sodium salicylate would possibly prove a certain destroyer of that poison also. Therefore I would suggest only as a *possible* theory, as we know so little how it acts, that the antipyretic powers of this agent may be due to its power as a germicide; the more so as these properties are very much less seen in febrile action due to local inflammations, as pneumonia or pleurisy, than in those where we have ground for supposing some poisonous principle is circulating in the blood. But putting all theory aside and keeping solely to facts, and using it simply as a remedy for the treatment of a symptom in the typhoid process, the same as we would use styptics for hemorrhage, alcohol for failing circulation, or sedatives for delirium, we have in it a means, and a most powerful one, of controlling the much-dreaded increased temperature of the body. And here we may briefly consider upon what rational grounds the employment of any antipyretic treatment is *à priori* to be

advocated. In typhoid fever we have a disease for which we have no specific remedy that will abort or cut short its career, and all that lies within our power is to treat symptoms as they arise. Amongst its more dangerous manifestations is that of a long-sustained high temperature, which not unfrequently becomes the most important factor in our diagnosis, prognosis, and treatment. In the greater number of fatal cases (setting aside those due directly to hemorrhage and perforation) the patients appear to succumb to the direct effects of the excessive febrile movement; and therefore, if we can with certainty guard against the deleterious influence of this pyrexia, we shall rob the disease of a great part of its terrors. It is undisputed that the rapid degenerative changes found throughout the body, in muscle, glands, and viscera, are due directly to the increased temperature, these changes being found in proportion to the height and duration of the pyrexia; but of even greater importance is the deleterious effect produced upon the heart, and through it upon the circulation and upon the central nervous system. This being so, surely any agent that offers itself as an available weapon with which to combat, if not the specific poison, yet one of its most serious manifestations, is deserving of a fair trial before it is declared to be found wanting.

Does therefore salicylate of soda offer any, and if so, what, advantages over the means more commonly used to reduce this temperature? Foremost stands at present the cold bath. Many and enthusiastic, especially on the Continent, have been the advocates of this method, but I make bold to say that in the typhoid of this country at least it is not a remedy upon which we can always rely, neither is it always safe; and, chief point of all, it is not capable, and never will be, of daily ordinary application. And as much of the treatment of typhoid is not conducted in hospital, but by the usual medical attendant, it practically is not possible, to say nothing of the prejudice of the patients' friends, to carry out this treatment in the manner that its advocates demand.

Again, even its most ardent supporters, such as Leibermeister of Tübingen, admit that it is not admissible in all cases, as it is apt where there is a high degree of cardiac weakness to induce fatal collapse. And the same authority says that, if he were restricted to the sole use of either the cold bath or quinine, of the two he would prefer the latter. Quinine without doubt has large powers as an antipyretic, but the doses necessary for the full production of its effects are taken by patients with extreme loathing, and are exceedingly apt to produce nausea, vomiting, and serious disturbance of the stomach, to say nothing of the practical objection to its extensive use from its present high commercial value.



That sodium salicylate is a powerful agent, and one requiring skill and care in its administration, is at once admitted; its physiological effects are powerful and well marked. When given in full doses certain well-marked phenomena are observed—deafness, noise and ringing in the ears, a certain amount of restlessness, copious and rapid excretion by the kidneys, with usually a small amount of albumen in the urine. It is to be noted that no effect, or at most a very slight lowering, is produced upon a normal temperature, but very different is the case when we are dealing with a supra-normal temperature.

Although it is now matter of common experience that in the salicylates we possess the most powerful antipyretics to be found in the whole range of our therapeutic armamenta, yet it would appear that in this country at least these properties have in the treatment of typhoid been but little made use of. Even recently in the masterly address given by Sir W. Jenner on the treatment of this disease, alluding to salicylate of soda, he dismissed it with the remark, “it is said to reduce the temperature.” In Germany it has been used, but chiefly in conjunction with other remedies, as quinine, digitalis, and concurrently with the use of the cold bath; and lately in France Dr. Hallopeau has given to the Société Médicale des Hôpitaux a favourable report of the results obtained by its use in a small number of cases treated by him solely with this remedy. The number that I have treated with salicylate up to June 1880 is forty-six, twenty-eight males and eighteen females, varying in age from seven to fifty-six years, the larger proportion being between fourteen years and thirty-five. They represent only the more serious cases received into this hospital, and are about one-third of the whole number admitted during the time over which the treatment extends. In no case was the soda given when the temperature in the axilla was below  $102^{\circ}$ . The general treatment, in addition to the special, may be summed up thus: perfect rest, milk diet, with small quantities of beef-tea, acid and opium when diarrhoea excessive, acetate of lead or turpentine, with iced injections, for hemorrhage. Alcohol was never given unless the state of the circulation decidedly demanded it, except in the convalescent stages of some few cases in the form of wine. It should be noted that in the whole of these the temperature was taken every two or every three hours, night and day, whilst the salicylate treatment was being pursued, so that its effect hour by hour could be distinctly watched.

The routine practice has been this:—As soon as it was certain that there was a continuous temperature of more than  $102^{\circ}$  in the axilla, fifteen to twenty grains of the soda were given every two hours. This after about six doses usually reduced



the temperature two to three degrees; if not, the same dose was continued a few more hours until it had done so, this seldom exceeding twenty-four hours from the commencement. The dose was then diminished one-half, and given every two or three hours, increasing it through the day if there was much tendency to exacerbation towards night-time. This was carried on for a period varying from three or four to nine or ten days, seldom exceeding the latter time, when the temperature would usually be fairly normal, with a little inclination to an evening rise in many cases for a few days after the salicylate was entirely discontinued. In most of the cases the usual physiological effects were observed, and in several alcohol was freely administered with the soda, in the form of brandy, whenever the pulse was feeble or the weakened action of the heart appeared to be becoming dangerous.—*Lancet*, March 12, 1881, p. 409.

---

#### 4.—THE ANTISEPTIC TREATMENT OF ENTERIC FEVER.

By C. E. SHELLY, Esq., M.B.Cantab., Hertford.

In the London Medical Record for August 1880 appeared a *résumé* of the papers published by Dr. C. G. Rothe in the *Deutsche Medicinische Wochenschrift*, Nos. 11 and 12, on the treatment which he had successfully employed in enteric fever. This consisted essentially in the administration of carbolic acid and tincture of iodine in frequently repeated doses until apyrexia was produced; and, thereafter, at longer intervals, for two or three weeks. The advantages claimed were, rapid and permanent subsidence of the high temperature, and of the vascular excitement (the pulse usually falling before the temperature, and often remaining subnormal in frequency for weeks, but not becoming irregular or intermittent); early subsidence of the gastric symptoms (by the beginning of the second week at latest); after which the patient gained a moderate appetite, and always experienced “a feeling of being quite comfortable”; and uninterrupted convalescence followed. Finally, Dr. Rothe expressed his wish that all who deemed his treatment worth a trial would publish their results, in order that his own observations might be confirmed or corrected.

In a short series of cases of enteric fever which came under my observation a few months since, Dr. Rothe's treatment, slightly modified, was put in practice, with results which were not less gratifying to the patients, I believe, than to myself. I should state at once that all the subjects were young people, their ages ranging from sixteen to twenty-seven years; that none of the cases—with one exception, in which the morning temperature during the first three days on which it was observed,

fluctuated between 104.7° and 105.2° F.—were of more than medium severity at the outset; and that the surrounding hygienic conditions were, in all cases, good. Humanly speaking, all the patients would probably have recovered under any form of rational treatment, combined with good and careful nursing. But I was struck by the early and rapid fall of temperature, the retardation and steadying of the pulse, the quickness with which the motions lessened in number and improved in quality, the cleanly tongue, the absence of sordes, the early removal of the abdominal pain and tenderness, the refreshing sleep, the comparatively slight emaciation, and the remarkable unanimity with which all the patients agreed in expressing themselves as feeling quite comfortable after the first few doses of the remedy. No increase of temperature was observed to attend the eruptions of the five successive crops of spots which appeared in the most severe case. No complications were noted.

So small a record of mild cases would be scarcely worth quoting *in extenso*; but, so far as I have been able to test this remedy, it has certainly proved reliable; and I shall be glad to know whether any others find, or have found, it valuable under circumstances more trying than those to which I have had an opportunity of applying it. The theory on which Dr. Rothe founds the name of his “antiseptic (antizymotic) treatment” is that to which the recent discoveries of Professor Klebs (*Archiv für Experim. Pathologie*, vol. xii, parts 2 and 3) give increased importance; and it would be most interesting to find how far the theoretical link between the control of the pyrexia and other symptoms of enteric fever, and the simultaneous administration of an antiseptic medicine would be strengthened, or the reverse, by the systematic examination of the blood and tissues of such patients, after the method of Klebs. The formula recommended by Dr. Rothe is one to two parts of carbolic acid and one of tincture of iodine in one hundred and twenty of water; one tablespoonful to be given hourly until a decided effect is produced on pulse and temperature; thence every two hours until apyrexia follows; and it should be continued for two or three weeks. Under these circumstances, it is not surprising that, “after two or three weeks’ uninterrupted administration, toxic symptoms always occurred.” In my cases, a draught containing one or two minims of carbolic acid, one to three minims of tincture of iodine, half a drachm of simple syrup, and an ounce of lemon water, was given every two, three, or four hours, or even less often, without any untoward symptoms, and with satisfactory results. Dr. Rothe recommended oil of peppermint as effectually disguising the flavour of the principal ingredients; but, following out a hint



derived from the publication of Lebon's formula, I found essence of lemon even more effectual to this end, and more generally agreeable; and in some cases small doses of nuxvomica and of nitro-hydrochloric acid were added to the mixture towards the termination of the disease.

I have mentioned the comparatively slight emaciation; the rapidity with which both flesh and strength were regained was in proportion; and the appetite, although it returned very early in the disease, never attained that craving character which is sometimes an almost painful experience in the convalescence from enteric fever.

I may add that this combination has yielded me good results in cases of choleraic and autumnal diarrhoea, with or without high temperature. Dr. Rothe says that, for the last ten years, he has not ventured to give up its use in phthisis, diarrhoea, diphtheria, &c.—*British Medical Journal*, April 9, 1881, p. 554.

---

#### 5.—NOTES ON TYPHOID FEVER.

By F. A. McEWEN, Esq., M.B., C.M., Resident Medical Officer, Alnwick Infirmary and Dispensary.

During the last two years I have had experience of two outbreaks of typhoid fever in widely-separated localities; the first being in a country district among an agricultural population; and the second in a town among the out-patients of a public dispensary.

In the winter of 1878-79, while practising in a country district in Aberdeenshire, I attended, between the end of November 1878, and the beginning of January 1879, fifteen cases of typhoid fever. Some of the cases were of considerable severity; but they all recovered. The average number of days that each patient was under treatment was twenty-seven and a fraction; but taking out two of the cases that were complicated, and lasted respectively forty-nine and fifty-four days, the average duration of the other thirteen cases was twenty-three days. In the great majority of the cases looseness of the bowels, with the characteristic evacuations, was present; but unless the diarrhoea continued distressing I generally allowed it to go on. When along with the looseness of the bowels there was restlessness and want of sleep, I found small repeated doses of Dover's powder most beneficial in subduing the diarrhoea and inducing quiet repose. In a few of the cases instead of looseness there was constipation with tympanitic distension. The constipation I never tried to obviate, and the bowels always acted in good time. One case in particular, where the patient remained ten days without having her bowels moved, made a very good recovery. During the whole time there was tym-

panitic distension, and a continual discharge of flatus; but at the end of the ten days the bowels were moved naturally. I confined my patients almost exclusively to milk, with a little lime-water or soda-water added. When the frequency of the pulse denoted great weakness of the circulation I gave from half an ounce to an ounce of good old Scotch whisky three or four times a day; and the administration of this stimulant I invariably found to have a strengthening effect upon the action of the heart. Sponging the body once or twice a day with tepid water was agreeable and refreshing to the patients; and was generally followed by a sense of comfort. When at all practicable I saw my cases twice a day; and in the absence of intelligent nurses I set myself to teach nursing practically and theoretically to the best of my ability to those about the sick.

As to the origin of the poison, in all the cases it could with considerable certainty be traced. The first case that occurred was the wife of a cowkeeper; and the six following cases had, all of them, their milk supply from this person's dairy. The rest of those affected got their milk from another source, but they also were infected through the milk supply; as the woman who supplied it, as well as her daughter, had the fever before any of the others were attacked. Moreover, in both instances, there was a clear indication of how the milk was contaminated: inasmuch as in the first case there was a piggery close to the milk-room, and a bad drain from the piggery passed under the pump whence the water for household purposes was procured; and in the second instance the well, where the milk dishes were washed, &c., was under the level of, and close to, the dunghill, and open to any sewage that might percolate in that direction.

In the autumn of this year (1880) an epidemic of typhoid fever broke out in this town. Most of the cases were confined to a particular part of the town, where the hygienic arrangements were very defective in some particulars. A large proportion of those affected were among the class of people who are the out-patients of the Dispensary. During four months I attended twenty-five cases. They all recovered. Ten out of the number were confined to bed over three weeks. Five were confined to bed over six weeks. In most of the cases the temperature, when the patient was first seen, was over  $102^{\circ}$ . In one case only did I find, during the course of the disease, a temperature of over  $105^{\circ}$ . I frequently remarked an almost natural pulse, as regards frequency, along with a temperature of  $102^{\circ}$ - $104^{\circ}$ . Diarrhoea was almost invariably present; and I noted that in many of the cases it was worse during the night than during the day. Repeated small doses of Dover's



powder always alleviated this symptom when it was considered advisable to subdue it. The milk, with soda-water or lime-water added, was the principal nourishment given, with occasional drinks of beef-tea, of which most patients soon got tired. I had the skin sponged daily with tepid water during the height of the attack.—*Practitioner*, March 1881, p. 161.

---

6.—ON THE DIAGNOSIS OF THE MILDEST FORMS OF  
ENTERIC FEVER.

By Dr. CHRISTIAN BAUMLER, F.R.C.P.Lond., Professor of  
Clinical Medicine in the University of Freiburg in Baden.

Cases in which the question arises whether we have to deal with a mild case of enteric fever or simply with acute gastro-enteric catarrh, are not of rare occurrence; and it may sometimes, at least for a time, be a matter of great difficulty for the physician to arrive at a definite conclusion.

In all cases which, on more careful and closer examination, turned out to be either mild or abortive cases of enteric fever, or which gradually became fully developed into well-marked forms of this disease, there could be made out, mostly from the very beginning, *a decided enlargement of the spleen*, a symptom which clearly points to the *infectious* nature of a given disease, and the occurrence of which in a simple catarrh of the lining membrane of the stomach would be quite unintelligible, and, in fact, does not exist. This enlargement of the spleen, which in some cases, even on the second day of illness, may be so considerable that the border of the organ can be felt below the ribs, whilst in others it can only be made out by percussion, is *the* symptom on which, I think, most stress must be laid in judging of such cases; for of all the symptoms of enteric fever, besides the pyrexia, this is the most constant, and it is of more value for diagnosis than the pyrexia itself, inasmuch as a febrile state of exactly the same range of temperature and running the same course, as in a mild case of enteric fever, may be caused by some non-infectious local disease, whereas an enlargement of the spleen in an acute illness, unless caused by some disease of the liver, heart, or lungs, clearly points to blood-poisoning. Such an enlargement of the spleen has been present in all cases of abortive or mild enteric fever which came under my own observation, in London as well as in several places in Germany, and I have no doubt it will be found wherever cases of enteric fever of this mild form occur. The difficulty of making out an enlargement of the spleen in these cases is generally even less than in cases of well-developed enteric fever, in which the tympanites sometimes makes it quite impossible to trace the spleen by percussion, and still more to feel it.

In isolated cases of mild enteric fever the symptoms alone must be relied upon for a correct diagnosis, which is then based on the presence of pyrexia—generally with a more sudden onset and a quicker rise than in the ordinary forms of enteric fever—together with enlargement of the spleen, a slightly furred tongue with some gastric or gastro-intestinal disturbance, with headache and general lassitude, sometimes with considerable prostration; in rare cases of somewhat more prolonged duration with the occurrence of rose spots on the skin. When the chief symptoms are not well marked the diagnosis may become impossible; but whenever a number of similar cases occurs in the same locality the true bearing of them becomes at once clear, and every doubt is removed when among such cases there are some in which the symptoms of enteric fever become fully developed.

Of other morbid conditions with which such mild cases of enteric fever may be confounded, catarrhal affections of the stomach and intestines must in the first instance be considered. There are cases of common acute enteritis which, for a time, as to the general symptoms very nearly resemble the cases in question—the height of temperature and the course the pyrexia runs may be exactly similar, the tongue is generally more furred, but here also, if the patient sleep with his mouth open, we may get the red tip and edges of the tongue and sometimes the dry streak from the tip backwards, but there is no enlargement of the spleen; there may be marked distension of the abdomen, much more so than in cases of mild enteric fever; there may be not only tenderness but much pain in the cæcal region, where very soon a hardness or a distinct tumour appears, which is due to submucous and peritoneal exudation. There can then be no more doubt about the case, if indeed the suspicion of a typhlitis or perityphlitis had not been raised from the very beginning.

Catarrhal inflammation of the gastric mucous membrane, such as occurs after taking indigestible food, or after excesses in alcoholic beverages, or which, in persons with a special disposition, may occur even after exposure to cold, is generally unaccompanied by pyrexia, or only a very moderate rise of temperature to about  $101.5^{\circ}$  or  $102^{\circ}$  takes place, and if the case be properly treated this pyrexia subsides in a day or two. In cases of this as well as of the former kind the temperature may exceptionally reach a higher point, and its elevation lasts several days in individuals who, after any trifling exciting cause, are subject to febrile attacks; but in these cases, as well as in the previous ones enlargement of the spleen is absent.

The cases of a slight infection with, or an unusually mild reaction to, the poison of enteric fever present a great variety



of forms, although in their leading features—viz., the pyrexia, the enlargement of the spleen and those gastric and other symptoms which are chiefly due to the febrile blood-heat—they are identical. But there is one point which has been noticed by almost all who observed and described such cases—namely, that the mildness of the attack does not so much consist in the slightness of the symptoms as in the shortness of the whole attack. The symptoms may be rather grave in a case of hardly a week's duration; and, on the other hand, in a case of fully-developed enteric fever of three or four weeks' duration they may be so mild that the patient can with difficulty be kept in bed. In many cases of very short duration the onset is very acute, and the gastric disturbance, not infrequently marked by vomiting, very prominent.

If it be granted that cases of acute illness in which, beyond the general febrile symptoms, an early enlargement of the spleen takes place are due to some infection, it is not at all improbable that other infective agents besides that of enteric fever may, under certain conditions, produce very similar forms of disease. Cases of mild or abortive typhus may be undistinguishable from cases of mild enteric fever—the characteristic eruption being frequently absent in both, or a rather profuse eruption, coming on very early, being present in mild cases of enteric fever. There may be other, as yet less well known, infections having a similar effect on the body to that of the infective agent of enteric fever.—*Dublin Journal of Medical Science*, November 1880, p. 384.

---

#### 7.—REMARKS ON THE TREATMENT OF ENTERIC FEVER.

By Dr. JOHN SYER BRISTOWE, Senior Physician to St. Thomas's Hospital.

It was formerly the custom to “starve fevers.” During the last thirty or forty years, however, and in no small degree owing to the teachings of the late Dr. Graves, the practice of “feeding fevers” has been very generally adopted; and few, I should think, can doubt the wisdom of the change; for not only are fevers characterised by rapid degradation of tissue, with progressive emaciation and enfeeblement of system, but experience has demonstrated that fever-patients are capable in no inconsiderable degree of assimilating nourishment, and that the specific symptoms of their diseases are seldom, if ever, aggravated by its judicious administration. These remarks are especially true of enteric fever, which is a disease of long duration, and one in which emaciation and asthenia not only are rapidly developed and apt to become extreme, but are exceptionally slow to be recovered from. But it is a fever which,

probably more than any other specific fever, demands care and judgment in its dietetic management; for its incidence is mainly on the alimentary canal, and dietetic errors are likely, therefore, to be attended with immediate injurious results. I need scarcely remind you, that Peyer's patches and the solitary glands in the lower part of the small intestine are always affected in enteric fever, and the solitary glands in the large intestine in about one-third of the total number of cases; that ulceration of the diseased patches commences for the most part from the seventh to the tenth day of the fever; that cicatrization usually begins some time during the fourth week, but may be delayed indefinitely and indefinitely prolonged; and that the specific consequences of the intestinal lesion, against which we have especially to take precautions, are uncontrollable diarrhœa, intestinal hemorrhage, and perforation of the ileum. Under these circumstances, it is clear that the food to be administered should be easy of digestion and assimilation, and that its residue should be unirritating to the diseased bowel along which it has to pass. Dr. Murchison observes that it "may consist of such articles as the following: milk, eggs, beef-tea, veal- or chicken-broth, to which may be added vermicelli or arrowroot, meat-essences, meat-jellies, custard, bread-and-milk, sago, and tea or coffee diluted freely with milk." But this, it seems to me, is to be regarded rather as an enumeration of the articles of diet from which we may select under special circumstances, and in exceptional cases, and to which we may resort indifferently during convalescence, than as a list of foods to be administered indiscriminately during the febrile stages of the disease. Indeed, Dr. Murchison admits, what most of us know by experience, that beef-tea and other animal broths and essences not unfrequently promote diarrhœa in enteric fever; and the suppression of the salivary, and probably of the pancreatic, secretion which attends the disease interferes importantly with the digestion and assimilation of starchy matters, which thus, as Dr. Cayley especially maintains, become irritants to the alimentary canal. These facts serve to control our liberty of action in no inconsiderable degree, and reduce us to the necessity of feeding patients almost exclusively on milk and eggs. Indeed, I suppose that few physicians at the present day give anything besides milk to enteric fever patients so long as the temperature remains febrile. That is the practice which Dr. Murchison himself advocates; it is the practice recommended by Dr. Cayley; it is the practice which has prevailed at St. Thomas's Hospital for many years past; and one which, with few exceptions, I have carried out as long as I can recollect, both in private practice and at the hospital. Very few patients are unable to take milk: and in almost all



instances in which patients protest that it disagrees with them in health, they yet take to it kindly here. Even when the stomach is irritable, as it often is early in the disease, and as it may continue during the greater part of its course, it will still generally retain milk given in small quantities and, if necessary, cooled with ice or diluted with soda-water or lime-water. It should be given, in quantities determined by the circumstances of the case, every one, two, or three hours; and thus from one to three or four pints may be readily administered even in severe cases during the twenty-four hours. The feeding of patients during convalescence is a matter of considerable nicety. The presence of a clean tongue and a good appetite, and the need of restoring health and strength to the enfeebled and emaciated frame, tempt one strongly to allow the patient to give full play to his lust for food. But when it is recollected that, during early convalescence, relapses are not unfrequent; that the characteristic ulcers of the disease are not generally healed until convalescence is far advanced; and that unhealthy processes, leading to diarrhoea, hemorrhage, and perforation, may be readily re-excited in them by anything which irritates the alimentary canal, as well as by anything which causes constitutional disturbance; the need of extreme caution becomes apparent. It is the usual custom at our hospital not to give anything beyond milk until the temperature has ceased for a full week to present a febrile rise; and then to commence with bread and milk, eggs, or rice-pudding; only subsequently adding fish, and fowl, and butchers' meat to the dietary. Of course, many cases occur in which it is thought right not to adhere rigorously to this rule; but it is curious, as most of our sisters know by experience, that the premature addition of solid matter to the diet, is constantly followed by exacerbation or temporary renewal of fever.

Enteric fever is one of the many diseases for which as yet no specific is known, and for which I am inclined to think no specific will ever be discovered. It was maintained, even a few years ago, that an emetic, given early in its course, would frequently arrest its progress, and my late colleague Dr. Brinton was a believer in this reputed effect of emetics. It has also been held that the diarrhoea is salutary and eliminative, and that, by promoting or encouraging it, the disease may be shortened or rendered less severe. These views were based on an imperfect appreciation of the nature of the disease; on the belief either that the intestinal affection is primary, and to be got rid of, like lice internally, or intestinal worms within, by local remedies; or that the intestinal mucous membrane is an organ by means of which the specific poison of the disease

is endeavouring to escape. But even though the contagium of enteric fever be received into the stomach, it has long passed thence into the system before the symptoms of the disease arise; and obviously at this time, whatever opportunity for the successful use of emetics might theoretically have been present at the beginning, has long passed away. And to look on the diarrhoea which is due to the enteric lesions as eliminative, is to look upon these lesions as centres of elimination, and is equivalent to regarding the eruptions of the eruptive fevers, which are mere foci for the growth of poison, as organs developed for the discharge of poison pre-existing in the blood—a view which is manifestly absurd when applied to the pustules of small-pox, or the tubercles of syphilis. But, if we cannot cure enteric fever, or eliminate its specific poison from the system, we can at any rate treat, and in most cases relieve, some of its most distressing symptoms or complications.—*Diarrhoea* is one of the most characteristic, and often one of the most troublesome and dangerous, symptoms of the disease. It is often absent, however, for days together; and occasionally is replaced by constipation during the whole course of the disease. Many physicians, and some even of our most distinguished contemporaries, would encourage by laxatives the diarrhoea, if not carried to excess; and would endeavour to excite it in cases attended with constipation. The practice is based on the opinion already referred to, that the poison tends to escape by the bowels, and on that that the retention of poisonous and putrefactive matters in the bowel is a source of danger. From the former of these views, I have already expressed my reasons for dissenting. As to the latter, I can only say that the motions are not, I believe, specially offensive, or, except in a specific sense, poisonous; and that the bowels, after all, naturally contain ordure. But, on the other hand, persistent diarrhoea tends materially to weaken the patient; the commotion which attends it is a source of direct danger to the diseased bowels; and, further, diarrhoea, once brought on artificially, is very often difficult to be restrained. I have no doubt myself that, although two, or even three, evacuations in the day may not call for measures of restraint, diarrhoea, if it should exceed this amount, as a rule, ought to be checked. Of all medicines, opium, in its various preparations, is the most valuable for this purpose. It may be given by the mouth in frequent small doses, or by the rectum in the form of a small enema or suppository. The dose and frequency of administration must, of course, depend on the amount of diarrhoea present, and on the age and condition of the patient. Other remedies, which may be employed either alone or in aid, are the vegetable astringents, especially kino, catechu, and tannic



acid, sulphuric acid, and lead. It is important to bear in mind that the danger of diarrhoea depends not only on the actual profuse discharge of fæcal matter, but on the peristaltic movements which accompany it, and which tend to cause rupture of thin-based ulcers. Now, this peristaltic movement may be present in the ileum, even when constipation prevails: for the large intestine, from being healthy or torpid, may fail to propel onwards the matters which are being constantly poured into it from the small intestine; that is, diarrhoea, so to speak, may be taking place, from the small intestine into the large, at a time when actual constipation exists. It is clear, therefore, that opium may be demanded to restrain the painful or violent movements of the bowels, even when the bowels are constipated.—*Constipation*, nevertheless, has, at times, to be dealt with. Is it right that constipation, when present, should be allowed to continue until nature brings relief, or should it be obviated by medicinal treatment? I do not think that constipation of a few days' duration is at all likely to be injurious; and, indeed, I have seen it continue for a considerable length of time without causing any ill-effects. It is not, however, desirable in itself that the bowels should be locked up; and, moreover, constipation, long continued, is apt to induce diarrhoea. Whether we should do anything, however, and what we should do, depends largely upon the condition of the patient and on the stage of his disease. There can be no doubt that, during the first week or ten days—that is, before ulceration has commenced—laxatives, such as castor-oil and rhubarb, may be given with impunity, and often with benefit. But, after ulceration has begun, and thence onwards until convalescence is far advanced, even the mildest opening medicines must be looked on with suspicion; and although I would not venture to maintain that under no circumstances should castor-oil or rhubarb be given during this period, I am sure that, on the whole, it is better and far safer to relieve the overloaded bowels by mild enemata. In support of this statement I may remind you that constipation is almost always due, not to sluggishness of the small intestine but to sluggishness of the large intestine in which the fæces accumulate and harden.—*Hæmorrhage* from the bowels may occur early in the disease, and is then small in quantity and of no importance. When, however, it takes place from the ulcerated surfaces, and after the second week, it is a matter for serious alarm. It is true that the patient usually recovers, even though it be copious, and that very often it does not recur. But in some cases the blood escapes with sudden impetuosity, and the patient dies rapidly in a state of collapse; and in some the hæmorrhage is so frequently repeated that the patient, who may seem doing

well for a time, finally sinks. I am inclined to think, with Sir W. Gull, that this bleeding is practically beyond our control; and that the patients in whom our remedies seem to be efficacious are those in whom the hemorrhage would not have recurred, even if no treatment had been adopted. It is not by applying weak astringent solutions to external bleeding wounds that hemorrhage therefrom is restrained; and few, I should think, would have any faith in the possibility of arresting such hemorrhage by the internal administration of astringents. Nevertheless, feeling it to be my duty to do everything in a dangerous crisis which might tend, however little, to benefit my patient, I should certainly, under such circumstances, give him ice-cold fluid to drink, apply cold compresses to the abdomen, and administer either lead, or tannic acid, or digitalis, or ergot, or turpentine, or perchloride of iron.—*Perforation of the bowel and consequent peritonitis* are almost invariably fatal; the only treatment, in addition to local applications to the abdomen, consists in bringing the patient speedily, and in keeping him, under the influence of opium.—*High temperature* (a subject to which I shall presently recur) is, no doubt, in itself, an element of danger; and, for this reason, its reduction seems desirable. Various medicines have been employed with this object; the most important and efficacious of which are quinine and salicylic acid. In order that quinine shall reduce temperature, it requires to be given in large doses—thirty or forty grains at once, or in instalments at short intervals. Thus administered, it reduces the temperature by three or four degrees in the course of a few hours, and the temperature may remain low for a dozen hours or more. Salicylate of soda may be given in doses of twenty or thirty grains every four hours, and also causes marked reduction of temperature. But in both cases the reduction is of temporary duration only, and the drug requires to be continued. I have not employed either of these remedies largely in the treatment of enteric fever; and I must confess that my own experience of their use has not impressed me favourably. Of the treatment of other complications I do not propose to speak; and it only remains for me to add, under the head of treatment, that, during convalescence, tonics, and especially the vegetable bitters, are of great value.

It is impossible to discuss the subject of the treatment of fevers without referring to the question of the use of alcohol in relation to them. In the early part of this century, when blood-letting was the fashion of the day, stimulants were seldom employed in the treatment of febrile disorders. Of late years, however, alcohol has not only been regarded by most physicians as an essential element in the treatment of fevers,



but by many has been esteemed our sheet-anchor, and has been administered sometimes in appalling quantities. The reason, however, for giving it thus was not simply to obtain its stimulating effect, but the belief that it was an article of food, and that it was assimilated by the patient at a time when other kinds of food could not be taken or were inadmissible. I see no reason to doubt that alcohol is a food; at any rate, it contains the same elements as starch and sugar, which are undoubted foods; and the experiments of Thudichum and Dupré show that, when once taken into the system, it is in some way used up in the system, and escapes in very minute proportion through the emunctories. But we have, doubtless, many foods that are more valuable as foods than alcohol; and in milk, at any rate, we have one which is generally well suited for invalids. It is rarely necessary, therefore, to have recourse to alcohol as food; and its use in fevers depends mainly on its primary or stimulating—its medicinal—influence. I have never used alcohol indiscriminately in any kind of fever cases; and, indeed, ever since I have had the care of patients in St. Thomas's Hospital, I have been very sparing in my use of it. In the year 1863, when typhus was prevalent in London, I carried out an experiment, which I have never published, and which Dr. Murchison carried out independently, and on a larger scale, a few years later at the Fever Hospital, with similar results to those which I also had obtained. I treated, without selecting them, half my typhus patients with alcohol from the beginning to the end, half my typhus patients without alcohol also from the beginning to the end, and found no appreciable difference in the results. From that time I have never regarded alcohol as an essential item in the treatment of either typhus or enteric fever; and I have seldom given it, unless special circumstances in the case indicated to my mind the need of stimulation. Many typhoid cases, and even severe cases, have recovered under my care without having tasted a drop of alcohol. Many no doubt have had it; but the circumstances under which I have given it have been: the presence of extreme debility, indicated by a feeble heart and rapid pulse; the supervention of typhoid symptoms; the occurrence of pulmonary complications; and the debility of prolonged convalescence. My friend Dr. Ord, in an interesting paper on Enteric Fever, in the eighth volume of the St. Thomas's Hospital Reports, based upon sixty cases (of which twenty-four were my own) received into the Hospital from the end of July 1877 to the end of March 1878, observes that "twenty-four patients received no stimulants at all; six only a small quantity during convalescence; eight not any till after the tenth day of admission; twenty-two received them within the first ten days of stay in the hospital, or while

the fever was in activity ; but very few indeed received them till after the end of the first week of illness." "The quantity of stimulants varied from a glass of wine or a glass of beer up to sixteen ounces of wine daily in one case, and eight ounces of brandy in another." Of these cases, eight were fatal, the mortality being at the rate of 13.33 per cent. The remarks above made, while they tend, on the one hand, to show that alcohol is less valuable than many persons suppose in the treatment of fever, tend, on the other hand, to demonstrate that alcohol is not injurious in fevers. Indeed, I never recollect to have seen a case in which, even under physicians who have used it largely, alcohol has clearly acted injuriously. My main reason for withholding it has not been the fear of doing mischief, but simply because I have not thought it necessary ; and, not finding it necessary, I have allowed economical considerations to weigh with me. I am satisfied that there are many occasions in enteric fever when alcoholic stimulants are of the greatest value ; and that whoever then neglects to have recourse to them imperils his patient's life.

It is admitted that, in all fevers attended with high temperature, the high temperature, though merely a consequence of the active disintegration that is going on in the system, is itself injurious by promoting disintegration and in other ways. There are theoretical grounds, therefore, in favour of reducing temperature in enteric fever. With this object, the patient may be kept in a cool and well-ventilated room, may be covered only lightly with bedclothes, and may have his food given to him cool or cold ; and there is no doubt that these measures, which are generally adopted, are judicious ; but they are quite insufficient of themselves to cause any obvious refrigeration of the body. I have already referred to the employment of quinine and salicylate of soda, and to the powerful influence they severally possess, when duly administered, in reducing temperature. The most powerful agent, however, in this respect, is the cold bath. I need not here go into the history of its introduction. It is sufficient to state that for some years past it has been very largely employed abroad, especially in Germany, in the treatment of enteric fever ; and that lately it has been extensively adopted among us by some of those physicians who are connected with fever-hospitals.—*British Medical Journal*, November 27, 1880, p. 839.

#### 8.—ON ACONITE IN REMITTENT FEVER.

By GERALD BOMFORD, M.D.Lond., Fort William, Calcutta.

In its general course and uncertain duration, remittent fever has a certain resemblance to acute rheumatism, and it is some-



times, especially on the west coast of India, accompanied by slight inflammation of the joints. The value of aconite in the latter disease has been mentioned by more than one writer, but has never been generally accepted.

*Case 1.*—An officer, aged 20, was taken ill at Bangalore on the 28th of April, 1877, with symptoms of remittent fever of a mild type. For the first four days quinine, in 20-grain doses, was administered every morning, but it had no effect on the exacerbations of fever which recurred regularly each day at 3 p.m.

On the fifth day, May 2nd, the fever was worse. The patient was sleepless, his tongue dry and glazed, skin dry, temperature  $103^{\circ}$  in the axilla, pulse 88. The quinine was stopped, and he was given one minim of tinct. aconite (B.P.) at 3 p.m., and this dose was repeated every quarter of an hour until 4.30, again at 5, and then every hour until 9—making a total of eleven minims.

On the following day, May 3rd, he was much better. He had slept well, his tongue was moist; appetite returning; temperature  $100^{\circ}\cdot4$ , pulse 82. Tincture of aconite was again given, in one-minim doses, at 10.30 and 11 a.m., and then every hour until 7 p.m., total—ten minims. At 3 p.m. there was free perspiration, temperature  $99^{\circ}\cdot5$ , pulse 66, and at 9 p.m., he was complaining of feeling cold; temperature  $97^{\circ}\cdot5$ , pulse 62. He had no relapse, and returned to duty on May 10th.

*Case 2.*—A sepoy, æt. 21, was admitted into hospital at Cannanore, Malabar coast, on the 6th of September, 1877, complaining of fever, pain in the joints, constant sweating, thirst, &c., and was ordered a mixture of quinine and potash.

By September 11th the rheumatic symptoms had disappeared, but the fever continued (temperature  $104^{\circ}\cdot5$  in the axilla), so he was ordered to have ten grains of quinine every morning.

On September 13th, the fever being still continuus, the quinine was increased to twenty grains. On September 16th he was much worse. He had had no sleep, was purged, and there was a trace of albumen in the urine. Temperature  $104^{\circ}$ , pulse 84. The quinine was stopped and he was given four minims of tincture of aconite (B.P.) at 9 and 11 a.m., and two minims every second hour from 1 to 7 p.m.—making a total of 16 minims. Next morning, September 17th, found him free from all his symptoms, after a good night. Temperature  $96^{\circ}$ , pulse 56. No more aconite was given, but in the evening he was suffering from severe dyspnœa, vertigo, burning pain in the stomach, and frequent micturition with scalding. Temperature below  $95^{\circ}$ , pulse 42. Under the use of diffusible stimulants, these symptoms passed off in about twenty-four hours, the temperature rising to  $97^{\circ}\cdot5$ , pulse 56. He had no further return of fever and went to his duties on the 22nd of September.

Case 3.—A police sepoy, æt. 26, was admitted into hospital at Simla on April 13th, 1879. He had been taken ill on the 8th while marching up from the plains, and had suffered from daily fever, dry cough, thirst, and extreme weakness.

When I first saw him, on the morning of the 14th, he was lying on his back utterly prostrated. He had been wandering all night, his tongue was dry and brown, lips and teeth covered with sordes, pulse very weak (132), respirations 40, temperature  $101^{\circ}7$ . From April 14th to 17th he remained in much the same condition. Every night he talked incessantly and made constant efforts to get out of bed. In the day-time he was sensible but complained of weakness and thirst. His eyes became slightly jaundiced and his mouth was dry, brown, and emitted a foul odour. Urine scanty, and became solid on boiling to the extent of one-third. Cough, with white frothy expectoration, had been constant, and there were loud rhonchi in the chest, but no dulness or other sign of pneumonia. Pulse ranged from 120 to 150. The temperature had fallen on the morning of the 16th to normal, but soon rose again; and, as a rule, it had ranged from about  $101^{\circ}$  in the morning to  $103^{\circ}$  in the evening. Up to the 17th he had been treated with quinine and a mixture of ammonia and chloroform, but on this date he was given six minims of Fleming's tincture of aconite in one-minim doses every hour from 1 to 6 p.m.

On the morning of the 18th he was very much better. He had been much quieter in the night, the urine was more abundant and almost free from albumen, the mouth cleaner and moist. Pulse 120, temperature,  $99^{\circ}7$ .

Four minims of Fleming's tincture were divided into six doses, one of which was given every second hour from 8 a.m. to 6 p.m. inclusive. On the 19th he was reported to have had a quiet night, and to have sweated profusely. His eyes were clearer, his tongue clean, and he was asking for food for the first time. Pulse 100, temperature  $98^{\circ}2$ . He continued to sweat throughout the day, and in the evening his temperature was  $98^{\circ}$ .

On the 20th his temperature fell below  $95^{\circ}$ , and he complained of vertigo and tinnitus aurium.

From this date he convalesced rapidly, and long afterwards used to sing the praises of the wonderful "drops," which he believed had saved his life.

The good effects of aconite in this class of fevers may be summed up as follows:—

- (1) It reduces the temperature.
- (2) It reduces the rapidity of the pulse, and makes it full and strong.
- (3) It cleans the tongue and restores the digestive functions.
- (4) It induces sleep.



(5) It increases the quantity of urine, and seems to have a direct effect in removing the symptomatic congestion of the kidneys.

(6) It promotes perspiration.

I may add that it is exceedingly grateful to the palate of a fever patient.

I have often given aconite, sometimes for days together, to typhoid-fever patients, with a view to cleaning the tongue and inducing sleep. If pushed it will reduce the temperature, but only temporarily. The fall of temperature, sometimes, as in Case 2 very remarkable, is not always accompanied by profuse sweating; and it cannot, I think, be explained on the "heat-loss" theory as being the result of evaporation of the sweat merely. In many cases I have noticed a slight rise of temperature preceding the fall, which corresponds with Dr. Mackenzie's observations on rabbits.

There is no doubt that aconite acts most usefully when given in frequent small doses, but this cannot be explained by the supposition that it is rapidly eliminated, for marked toxic symptoms may occur many hours after the last dose (Case 2). In all my cases, with one exception, the pulse has been improved in strength as well as reduced in rapidity. The exception was a case of typhoid in a man who had suffered from a weak irregular pulse for many years. The aconite seemed to increase this condition of pulse and was consequently stopped.

In conclusion allow me to say a few words on the subject of "Warburg's tincture," a nauseous compound much recommended for remittent fever. I have used it in many cases in Southern India, the land of its birth and greatest reputation, and I have always followed the directions implicitly, but it has never been my lot to find my patient wallowing in perspiration, and the room fragrant with confection of Damocratis, as has been so eloquently described by the advocates for its use. It is very expensive, extremely nauseous, and, in my hands, has proved itself useless.—*Practitioner*, March 1881, p. 186.

#### 9.—SOME POINTS IN THE PATHOLOGY AND TREATMENT OF ACUTE RHEUMATISM AND DIABETES.

By Dr. P. W. LATHAM, M.A., Downing Professor of Medicine in the University of Cambridge, Physician to Addenbrooke's Hospital.

I propose to consider four questions:—

1. What is the starting-point of the morbid process in acute rheumatism?

2. Is there any pathological relationship between it and diabetes mellitus?

3. Will any remedy cure acute rheumatism; and
4. If so, how does the remedy act?

I think it will be conceded that these are questions of considerable interest, and well worth attention. The solution I am about to offer of the problems may not be altogether complete; but if there is no unreasonable improbability about the theory, it may at least be suggestive, and perhaps lead to further investigation.

1. What is the starting-point then of the morbid process? Let us turn our attention to the muscular tissue and consider for a moment the physiological changes which take place in that tissue in a state of health. The hæmoglobin of the venous blood as it passes through the lungs becomes wholly, or almost wholly, oxyhæmoglobin. Hurried to the tissues, the oxygen of the arterial blood passes from the blood into the muscular tissue; immediately it has passed it is then fixed in some way at present unknown to us; the tissue packs away at every moment each molecule of oxygen which it receives from the blood so as no longer to be removable by diminished tension. Out of the body the tension of oxygen in the muscle is *nil*, none can be obtained from it from the air-pump. The oxidation takes place in the muscle itself, oxygen passes into the tissue, but we cannot trace its sojourn there. On the other hand, the muscle is always producing and discharging carbonic acid, and when it contracts there is a sudden and extensive increase of the normal production of that gas. With much but not all of its oxyhæmoglobin reduced, the blood passes on as venous blood, and with its carbonic acid tension increased it arrives in the lungs, where the gas is discharged.

This change now in the muscular tissue, the fixing of oxygen and exhalation of carbonic acid, must be regulated by some nervous mechanism, in the same way, for instance, as the blood is prevented from coagulating in its vessels or the stomach from digesting itself; and this power must originate in some nervous centre, which we may call the "inhibitory chemical centre," or, using a more applicable term, the "coördinating chemical centre"—the centre which restrains chemical action and regulates the production of heat. "And, indeed, we have some positive evidence of the existence of such mechanism."

Suppose this "coördinating chemical centre" has undergone functional or organic change, and that this regulating action is consequently weakened or removed, what would be the result? Instead of the muscle absorbing and fixing oxygen and giving out carbonic acid, some intermediate changes in the tissue would show themselves; the tissue would be disintegrated and oxidised more vigorously, and those changes would take place, in some degree at least, which in the laboratory are seen to result from



decomposition or the action of oxygen or ozone. And what are those changes? One of the first is that the reaction of the tissue becomes acid. "Whilst muscle is alive and in a physiological condition it possesses a neutral reaction to test-paper; so soon as it dies this reaction becomes acid, and this takes place so rapidly in warm-blooded animals, as to render it almost impossible to ascertain the normal reaction." The acid produced is lactic acid. Whence is it derived? Muscle we know contains a small amount of glycogen, which by hydration may be converted first into glucose and then into lactic acid.

Sarcosine, though not found in a free state in the body, is obtained in the laboratory from dead muscle. Nor is it inconceivable that under the action of chemical and *vital* forces acting upon the muscle, urethane or alanine, or it may be some other compound metameric with sarcosine, may be formed in the muscle as it passes from a state of health and activity to one of disintegration and death. At any rate, whatever be the source of lactic acid, whether from glycogen or other compounds in the muscle, we know that it appears in the muscle as the result of disconnexion with the nervous centre, and I therefore suggest that if the "inhibitory" or "coördinating chemical centre" be weakened, as in acute rheumatism, by the effect of cold or other cause, lactic acid instead of being oxidised in the muscle will pass from the tissue into the blood; and independently of its own conversion into carbonic acid and water in the blood, there produce its effect on the smaller arteries, and, by determining a larger amount of blood and oxygen to the part, cause more rapid oxidation of tissue, and develop considerable heat or pyrexia.

That the presence of lactic acid in the blood will determine a larger amount of oxyhæmoglobin to the tissue and cause more rapid transformation of tissue than normal, is a natural inference from the researches of Dr. W. H. Gaskell, who found that the injection of a solution of lactic acid (1 to 1,000) into the circulation caused dilatation of the smaller arteries.

But if lactic acid is derived from some variety of  $C_3H_7NO_2$ , or from glycogen, whence comes the glycogen, or that other substance? Again, in acute rheumatism there is a large elimination of lithates—whence are they?

Let us turn our attention to the constituents of dead muscle. Creatine in dead muscle by hydration may be resolved into sarcosine and urea; and four molecules of sarcosine, together with nine atoms of oxygen, contain the elements of uric acid, glycogen, carbonic anhydride, and water.

But as sarcosine is not found in living tissue, if urea, uric acid, &c., are products of living tissue, then there must be some undetermined compound of  $4C_4H_9N_3O_2$  from which in living

muscle these substances are produced, and from which in the process of dying sarcosine results.

Now, a very interesting point arises. In considering the changes of uric acid we see that the urea is formed both in the muscle and in the liver, and we may assume that when it is formed it passes at once by inter-molecular change direct to the kidneys. So also we may assume that carbonic acid, whether formed in the muscle or in the liver, directly it is formed passes at once into the blood, to be eliminated by the lungs.

It would seem that in a state of health glycogen and glucose are abnormal constituents of muscle, the liver glycogen appearing in the tissue as  $2C_2H_6O$ , to be at once transformed into  $CO_2$ , and  $H_2O$ . But if the controlling power is weakened, glycogen is transformed, and appears in the tissue as lactic acid or glucose, according to the extent to which that power is weakened, and according to the variation in the molecular change along the blood line; and these substances may also, from the same causes, appear in the blood itself. If lactic acid produces the same effect on the smaller arteries of the kidney as was seen in the experiments of Dr. Gaskell to be the effect on those of muscular tissue, and so (under certain conditions of the red blood-corpuscles to be presently referred to) act as a diuretic, the experiments of Claude Bernard seem to support very strongly the view I have here advanced as to the common origin of glucose and lactic acid. "When we prick the mesial line in the floor of the fourth ventricle, in the centre of the space between the origins of the auditory and pneumogastric nerves we at the same time produce an exaggeration of the hepatic (saccharine) and of the renal secretions; if the puncture be effected a little higher, we very often only produce an augmentation in the quantity of the urine, which then frequently becomes charged with albuminous matters; while if the puncture be below the indicated point, the discharge of sugar alone is observed, and the urine remains turbid and scanty. . . . As these two points are very near one another, it often happens that if the instrument enters obliquely they are simultaneously wounded, and the animal's urine not only becomes superabundant but saccharine."

Having suggested the common origin from which glucose and lactic acid may be derived, I will not here stop to consider how they produce their effects, but on the hypothesis that they result from an enfeebled action of the "coördinating chemical centre," proceed to consider whether any remedies can be administered which, combining chemically with their antecedents, will put a stop to their formation, and produce innocuous compounds which are speedily eliminated from the system.

There are two remedies which have a marked effect in lower-



ing the temperature in pyrexia: quinine and salicylic acid. How do they act?

We know that quinine (1 part in 1000) will stop the amoeboid movements of the white blood-corpuscles; it will check inflammation and the resulting out-wandering of these white blood-corpuscles. If in the febrile stage, when the size of the red blood-corpuscles is diminished, quinine be administered, the globules resume their normal size. This is due, however, to the fall of temperature, for the same thing occurs whenever the fever heat is lowered by the action of external cold.

If ozonised oil of turpentine be dropped into an alcoholic solution of guaiac resin, no alteration of colour occurs, but if a drop of blood be added, the blue appears at once—i.e., the blood acts as a carrier of ozone from the turpentine to the resin. Professor Binz has found that quinia, even in so small an amount as one part in twenty thousand, has a perceptible influence in preventing this. Similarly when into a dilute watery solution of the sulphate of indigo carbonate of sodium is thrown until the reaction is decidedly alkaline, and a little blood, and subsequently ten drops of ozonised turpentine are added, a green colour begins at once to develop, and in a little while passes into the clear yellow of isatin. In this case also the blood acts as a carrier of ozone, and Binz and his pupil Ransoné have found that quinia also inhibits this action, one part of it added to a thousand of the mixture delaying the change of colour for an hour. That the action of the alkaloid was on the blood, and not on the indigo and guaiac solutions, was shown by the fact that when similar solutions without the blood were shaken in the air and absorbed ozone, the characteristic colourations of its action were produced just as readily when quinia was absent as when it was present. Binz also proved that the red corpuscles were the portions of the blood affected.

It would seem, then, that when quinia is administered internally it acts as an antipyretic simply by inhibiting the action of the red blood-corpuscles, and preventing the transference of ozone or oxygen by them from the lungs to the tissues. By its action in this way, it produces a great decrease in the elimination of uric acid and urea; it prevents therefore the oxidation of living sarcosine. After a thirty-eight-grain dose, Dr. G. Kerner found the urea was diminished one-fourth, and the uric acid about four-fifths.

Quinia passes through the system unchanged, and is eliminated chiefly by the kidneys. Dr. L. Thau in three experiments out of 4.4586 grammes of the alkaloid given, recovered from the urine passed during forty-eight hours, 4.3 grammes, so that only 0.1586 gramme remained unaccounted for.

By its presence therefore in the blood quinia may prevent the oxidation of the various normal or morbid products in the tissues, and so reduce the temperature, but it does not favour the elimination of those morbid products; they still exist in the tissues, and must be eliminated before the part is restored to a healthy condition. As an illustration of this, I may mention that on two occasions I have seen attacks of gout developed whilst the patient was taking small doses of quinia as a tonic; in one case the patient actually predicting that as I had given him quinine, it would certainly induce an attack.

The action of bark differs in some respects from that of quinine. It has been found by clinical experience that in ague 200 grains of bark produce an effect equal to fifteen grains of quinine, that quantity of bark containing less than five grains of quinine. Is this due to the quinic acid which bark contains, the dry distillation of which produces either benzoic acid (Zwenger and Himmelman) or salicylous acid (Wöhler)?

The other remedy to which I have referred—namely, salicylic acid—when introduced into the system must enter into chemical combination with some of the constituents of the tissues. After its administration it appears in the urine partly as salicylic acid, but also as salicyluric acid; in the same way as hippuric acid, after the administration of benzoic acid, is found in the urine.

By combining one molecule of living sarcosine with two molecules of salicylic acid we obtain the elements of salicyluric acid, and oil of gaultheria or winter-green. And oil of winter-green, when acted upon by soda (in the blood), is resolved into sodium salicylate and methyl alcohol. This action, dependent upon the constitution of living sarcosine, may not be impossible, the salicyluric acid and sodium salicylate being eliminated by the kidneys, and the methyl alcohol inducing that diaphoresis and cerebral disturbance which are often associated with the administration of salicylic acid.

But the following hypothesis seems more reasonable. Salicylic acid when taken into the stomach will be absorbed, and pass directly by the portal vein into the liver. What will it meet with there? If we turn to the list of substances in Tables I. and II. about to be hydrated in the liver, we find at the end glycogen and either allanturic acid or alloxan. Alloxan, when acted upon by acids ( $\text{HCl}$  or  $\text{H}_2\text{SO}_4$ ), is, we know, decomposed, the resulting products being alloxantin, oxalic acid, oxaluric acid, the last being transformed into oxalic acid and urea, and this last again into carbonic acid and ammonia.

Glycogen and alloxan combine to form carbonic and cyanic ethers, urea, and carbonic acid. The carbonic ether is then



transformed into salicylic ether, which, passing into the blood, is decomposed into alcohol and sodium salicylate. The cyanic ether is transformed into alcohol and allophanic ether, the last (or it may be some compound metameric with it, and bearing the same relation to it that the isocyanates bear to the cyanates) combining with salicylic acid to form salicyluric acid and water. Consequently, from four equivalents of salicylic acid we have three equivalents of alcohol set free in the blood, and to this, in some measure at least, must be due the diaphoresis and cerebral disturbance. The sodium salicylate and salicyluric acid pass off in the urine.

These formulæ will explain the difference of the action of salicylic acid in diabetes and in acute rheumatism. Alloxan is the first necessary factor, and in acute rheumatism, as there is increased oxidation going on in the muscular tissue, abundance of alloxan is formed. This, decomposed by the salicylic acid, converts the glycogen into the ethers, which are then eliminated as salicyluric acid, and the formation of glucose and lactic acid is prevented.

If in diabetes the coördinating chemical centre is only weakened to such an extent that, though glucose appears in the blood, alloxan is still formed and appears in the liver, salicylic acid will combine with it, decompose the glycogen, and so prevent the formation of sugar. But if the centre is further weakened, so that  $(\text{CN})(\text{NH}_2)(\text{CO})_3$ , the antecedent of alloxan in the muscular tissue is decomposed in the tissue, forming other products, such as oxamide, urea, &c., which escape into the blood, then the salicylic acid alone can no longer decompose the glycogen, and the amount of sugar eliminated from the system would be unaffected by this remedy. In diabetes, therefore, dependent upon organic change in the nervous system, and of some considerable standing, little benefit would probably result from salicylic acid administered alone. A diet rich in nitrogen must be given, in order to produce excess of uric acid, which, oxidised perhaps in the blood, would then furnish the requisite material for the salicylic acid to act upon. Caffein in such cases may theoretically be worth a trial in combination with salicylic acid, since with hydrochloric acid and chlorate of potassium it is converted into alloxan.

If alloxan is formed in sufficient quantity to combine with the glycogen and prevent the formation of glucose, oxalic acid would be formed and appear in the urine; and as regards this, I may mention that in the case of a patient who came under my care in Addenbrooke's Hospital many years ago, suffering from diabetes, and who recovered under a restricted diet, I noticed that whenever his symptoms were improving oxalates

appeared in his urine, but disappeared when the sugar increased. I then thought their presence due to the oxidation of the glucose, but the above formula shows that this is only partially the case. The fact appears to have some clinical significance.

As regards the appearance of uric acid and urates in the urine, it may, I think, be shown that if the disintegration of the muscular be in excess of that of the nervous tissue, uric acid will be formed in excess and pass into the blood. If the contrary condition exists there will be excess of some of the biliary secretions and of phosphates in the urine, but this must form the subject of further investigation. Salicylic acid, then, in acute rheumatism and in diabetes enters into chemical combination with the antecedents of lactic acid and of glucose, and so prevents their formation; and in acute rheumatism, by preventing the formation of lactic acid, there is no longer that dilatation of the minute arteries and consequent hyperoxidation of the muscular tissue, producing pyrexia and increased formation of urates, which are accompaniments of the disease. But to effect this purpose the dose in this disorder must be large enough to produce some decided effect upon the system, such as copious diaphoresis, noises in the ears, or difficulty of hearing, and put a stop to the formation of lactic acid. Salicylic acid that has once passed through the portal system has probably comparatively little effect after it gets into the general circulation. Why this is the case does not seem very clear, but in experiments that have been made with benzoic acid, it was found that when the substance was injected into the circulation alone it appeared as such in the urine, and not as hippuric acid. When two grammes of benzoic acid and 30 cc. of bile (which contains glycocine) were injected into the blood of a dog or cat the urine was found to contain a considerable quantity of hippuric but no benzoic acid; with a larger proportion of benzoic acid the excess passed into the urine together with the hippuric acid. Simultaneously with the appearance of the physiological effects will come relief to the joints and muscles. The dose necessary to effect this is rarely less than 60 or 70 grains, it may be 100, 120, or more. The plan I adopt is to give the true salicylic acid in hourly doses of 20 grains until 60 grains have been taken, and then 10 or 20 grains every hour, watching its effect until the symptoms are relieved, and the patient's joints can be moved without pain. I give it in the form of pills (20 grains mixed with a little pulvis acaciæ and glycerine can be made up into six hard pills). And during the last four years, though I have given it to patients with all forms of heart disease, I have never seen any bad results follow its administration. Given in the form of pill it is, perhaps, absorbed less quickly, but more uniformly, into the



circulation. But I have been careful not to use the artificial salicylic acid. This is made by passing carbonic acid into carbolic acid, and is therefore, unless very carefully prepared, liable to contain carbolic acid. "When six or eight grains of carbolic acid are taken in a wineglassful of water a sense of numbness is felt on the lips and in the mouth, followed by a sensation of coolness. Then if the stomach is empty slight nausea and an uneasy sensation in the abdomen follow, with vertigo, ringing in the ears, and slight deafness. The pulse falls in frequency and force, as does also the cardiac impulse, and diarrhœa sometimes occurs." Similar effects to these have been ascribed to the use of salicylic acid, but, I believe, unfairly.

Whilst the remedy appears to relieve and cure acute rheumatism, it is an unquestionable fact that relapses are extremely liable to occur. These, I think, are explained by the supposition that whilst the formation of the *materies morbi* is prevented, owing to the decomposition of its antecedents, by the remedy, this has no effect in improving or restoring the tone of the "coördinating chemical centre," and in a short time, if the remedy be discontinued, the morbid products are again formed. But give the remedy in much smaller doses two or three times a day until the "centre" has recovered its tone, and then relapses need no longer be feared.

In diabetes large doses of the remedy have been given, but in favourable cases I have found one or two doses of twenty grains reduce the amount of urine one-half in twenty-four hours without raising the specific gravity, the diet remaining unchanged. I give this quantity twice a day, and a third dose at bedtime if the remedy produces no fulness at the back of the head nor buzzing in the ears, and allow the patients plenty of meat, tea, or coffee, and a moderate amount of wheaten bread and milk.

In pyæmia, typhoid fever, or other zymotic disease, where the poison is acting on the blood itself as well as affecting the various nervous centres, salicylic acid (if the theory I have advanced be approximately true) can have comparatively little beneficial effect.—*Lancet*, January 8 and 15, 1881, pp. 46, 96.

---

#### 10.—ON THE PATHOLOGY AND TREATMENT OF GOUT.

By Dr. AUSTIN MELDON, M.R.I.A., Surgeon to Jervis Street Hospital, Dublin.

From my earliest acquaintance with medicine, I have taken the greatest interest in gout, to which disease I myself have a strong hereditary tendency. In 1872, in a short article in the *Lancet*, and subsequently in a small volume in more detail, I

published my views, derived from a note-book containing five hundred cases. Now, from an experience extending over three times that number, I see no reason to change those views, and once more place them before my professional brethren.

It is now more than two thousand years since Hippocrates first described gout; and since his time, every medical writer has devoted much space to its consideration. Many, too, have been the hypotheses concerning its nature; and yet it must be confessed that the progress made in two thousand years has been but very slight. Hippocrates believed the disease to be due to the retention in the blood of some natural humour which ought to have been eliminated.

At the present time, it is the opinion of most medical men that the disease is caused by the retention in the blood of uric acid or urate of soda; and all recent treatment has for its object its elimination. Thus it may be seen that the advance made in the course of so many centuries has been confined to the discovery of the particular matter retained in the blood of the gouty. That this is the sole cause of gout I have grave doubts, to prove which will be the object of this paper.

It may be thought that, although the pathology of the disease has progressed so little, we are much in advance of our forefathers in regard to treatment. Yet this is not so certain.

Dr. Garrod's opinions as to the relation of uric acid to gout have gained almost universal assent. Many medical men, indeed, do not believe with him that the kidneys are the organs whose functional impairment causes the undue accumulation, but refer it to derangement of the stomach, liver, or skin; yet it seems all but an acknowledged fact that the principle of the doctrine is correct. Nevertheless, I have not the slightest doubt that very little reflection will convince every practical physician that the presence of uric acid in the blood cannot be the sole cause of this distressing malady. It would be a satisfactory explanation were it not that, as is now a recognised fact, there are many persons whose blood is loaded with uric acid, and who are in perfect health. In Ireland, gout is one of the rarest affections met with in hospital practice; yet I have repeatedly found the blood of otherwise healthy men, lying in our accident-ward, loaded with urates. For some years past, my own blood has been in this condition, although I have never had the least symptom of the disease. Dr. Gairdner found urates in the blood of a boy four years of age, in whose family gout had never been known. Quite recently, I have had the opportunity of examining the blood of an elderly gentleman, who is subject to regular attacks of gout, and who, at the time of the examination, was just convalescent from a very severe attack, which he allowed to run its course without



any treatment. I found the serum rich in urate of soda ; which proved conclusively to my mind that Garrod's theory, that inflammation destroys the uric acid in the blood, is not correct.

It is, then, necessary to find some other explanation of the disease. My theory is as follows.

The condition of the liquor sanguinis I believe to be of the first importance in the production of this formidable malady. The disease cannot be developed unless the blood contained a considerable quantity of uric acid and soda in some form. Thus far the uric acid theory is correct ; but, in my opinion, it is an error to suppose that these two exist in combination before an attack of gout ; the moment they combine, the disease is produced.

Nerve-force, I believe, when in a healthy condition, preserves these two separately in a form in which they may be eliminated by the kidneys, skin, or bowels. As soon, however, as this nervous influence is removed or lessened, these two unite. Thus, when blood or serum is taken from gouty patients, the uric acid and soda, no longer retained separate by the nerve-force, unite and crystallise as urate of soda. In gout, when nerve-force is lessened, the circulation becomes languid, passive congestion occurs, and the uric acid, seizing on the soda, forms urate of soda. This is deposited in the tissues, generally in those most removed from the brain and centre of circulation ; inflammation results, and an attack of acute gout is established.

The irritation produced by the disease excites the nervous system to unusual energy. This invigorates the heart to increased action, and a greater or less amount of fever is set up. This, for the moment, arrests the disease ; but soon depressing reaction produces a second, a third, and even a fourth exacerbation, and then nature gradually restores the nervous system to its normal condition. The rapid circulation stimulates the almost congested organs ; and the kidney, liver, and skin aid one another in eliminating the uric acid. Thus the fit passes off, leaving the nervous system in a more energetic condition than before, and the mental faculties clearer ; and the patient finds himself in a far better state of health than previously to his illness.

In youth, before care, anxiety, and disappointment have well-nigh worn out the brain, the nervous system is active ; and in spite of dissipation and indulgences of all kinds, gout is rare ; but as soon as age and care lay their mark on the great nerve-centre, gout but too often appears. Every cause I know which is capable of exciting an attack of gout is such as would produce nervous depression. Air and exercise tend to invigorate the nervous system ; the want of them must produce a depression. In this way, sedentary employment is one of the most frequent causes of gout.

In the present day, women are comparatively free from gouty affections. This immunity is in a great measure, if not entirely, owing to the fact that they seldom indulge in the excesses common with men. Hippocrates stated that women were free from the gout; but at a later period, when, during the Roman Republic, their habits had changed, Seneca wrote: "The nature of women is not changed, but their manner of living; for, while they come up to men in every kind of licentiousness, they equal them in their bodily disorders. Is it, then, surprising to find the most skilful physician (Hippocrates) in error, when we see so many women gouty and bald-headed? They have lost the benefit of their sex; they have cast off the woman, and are doomed to the diseases of men. Gout, moreover, is a frequent disease among prostitutes after a certain age."

The time that an attack generally commences is at night, when both nerve-force and circulation are weakest. The part, too, most usually attacked—the great toe—favours my theory; and I need scarcely mention the numerous instances recorded where gout has been brought on by great nervous depression. It is, indeed, seldom that England has a Prime Minister who is free from gout; and my notebook furnished me with very many cases where I traced the disease directly to the depression of the nervous system. Not long since, after a prolonged trial, a verdict was returned against the plaintiff in a celebrated case. The same night I was summoned to his bedside, and on the following night to that of his wife, both struck down with gout; neither one nor the other having previously suffered from the disease. Such cases are familiar to all. Politicians and speculators are particularly liable to gout. I think the action of colchicum is one more proof: in small doses, I am convinced, a nerve-stimulant; in larger doses, it is sedative. I have on more than one occasion, whilst fasting, and in perfect health, taken doses of from ten to fifteen minims of tincture of the seeds of colchicum. Its first effect was to produce nausea, and then increased action of all the organs; the skin became moist; the secretion of the kidneys and liver was increased; and the mental faculties were invigorated. On some occasions, I have experienced severe palpitation consequent on its use. All these results can only be produced by a nerve-stimulant.

Looking, therefore, on gout as having a predisposing and exciting cause, it naturally follows that we may cure the affection by either of two plans, as directed against one or other cause. I invariably commence my treatment, when my patients are strong, by taking from four to eight ounces of blood from the arm; and repeatedly I have found the pain subside while the blood was flowing, and not again return. A purge then follows, with colchicum; and then I resort to more



tonics. Phosphate of quinine is my favourite; but sulphate of nickel, phosphorus, strychnia, or copper, may be used in cases where quinine will not agree. I always order occasional doses of quinine as a preventive. I have found a ten-grain dose of sulphate of quinine cut short an attack.

In one case which fell under my notice, the patient stated that an electric shock had completely relieved him of pain; and in another case the patient was in the habit of inhaling oxygen, and stated to me that it always shortened the attack.

There is one more point on which I wish to touch; that is, the power of the skin to eliminate uric acid. If a considerable quantity of the cutaneous secretion be obtained and evaporated, abundance of crystals of urate of soda will be obtained. In a Turkish bath, with the aid of a watch-glass, this can readily be obtained.

The conclusions which I would draw from this paper are as follows:—

1. The presence of uric acid and soda in the blood is not the sole cause of gout.

2. Want of exercise and animal diet will produce an accumulation of uric acid in the blood.

3. Uric acid and soda must exist in the blood before the disease can be produced.

4. There must be depression of the nervous system to cause an attack of gout.

5. Depression of the nervous system causes an union between uric acid and soda, forming urate of soda.

6. When an attack of gout has passed away, it does not necessarily follow that the uric acid has disappeared from the blood.

7. Uric acid may exist in the blood in considerable quantities, and for any length of time, without causing gout.

8. The use of nerve-tonics, as quinine, strychnia, and caffeine, and such-like, as well as the inhaling of oxygen and the use of electricity, are of much service in the treatment of the disease.

—*British Medical Journal*, March 26, 1881, p. 466.

## 11.—ON THE LOCAL ORIGIN OF CANCER.

By JONATHAN HUTCHINSON, Esq., Senior Surgeon to the London Hospital, and Professor of Surgery and Pathology in the R. C. S.

[The following paper, although read (before the Hunterian Society, October 3, 1860) twenty years ago, is now printed for the first time. It is introductory to one just read on the "Pre-cancerous Stage of Cancer," which will appear shortly. Although some of my opinions may have undergone a little

modification, I have for obvious reasons left the paper as it was written.—J. H.]

On the question as to how far and under what circumstances cancer may be regarded as a local disease depends for the most part our decision as to the measures for its treatment.

In syphilis we have a good example of a disease which is both local and constitutional—local in one stage and constitutional in another. No one will doubt respecting it that it may (idiosyncrasies apart) be developed without any regard whatever to constitutional tendencies, or, indeed, that it may, in its local stage, be completely and permanently cured by local measures only. In syphilis the poison passes from the original focus by absorption into the lymphatic system, it causes engorgement of the lymphatic glands in its passage through them, and in a later stage it enters the blood, from whence it is deposited, in the ordinary course of nutrition, in the various tissues of the body, causing by its presence the various secondary phenomena. Were a penis affected by chancre amputated before the poison had been absorbed, the patient would remain as healthy as ever he was; or even after engorgement of the glands had commenced, were the amputation performed with, in addition, a complete removal of the glands, the same result might possibly be effected—that is, under the supposition that the virus had not previously passed beyond them.

In tuberculous disorders we have probably the best examples which can be found of constitutional lesions. Of them it may be asserted that they usually involve several organs, or several different parts of one organ at the same time; that they often occur symmetrically; that they are attended by disorders of the digestive and assimilative functions, almost always commence in organs which are internal, or, if not so, at least well protected from external influences; and lastly, that they often affect primarily the lymphatic glands themselves,—all of which features mark the disease as one which depends upon a vitiated state of the blood, and is therefore constitutional, and not local in its origin.

[Since this lecture was written, facts have been adduced which show that even tubercular processes are infective, and that they may thus be local in the beginning, and general afterwards.]

Now, of course no one can doubt that malignant diseases are in their later stages constitutional, and that the blood itself becomes tainted. But the question is, on which class of influences does the very commencement of cancer depend? Does it begin in disorder of the assimilative functions, leading to change in the condition of the blood, or is it, as in syphilis, a mere matter of absorption of morbid material from a local growth, induced by local causes? In other words, ought the



malignant class of disease to be grouped with tubercle, as of humoral origin, or does the process by which the system becomes contaminated more nearly resemble what occurs in syphilis? I will first cite the facts which seem to favour the latter view, and then consider the objections to it.

1. *Some forms of Cancer continue throughout their course purely local disorders.*—The rodent ulcer spreads merely by continuity from the part originally infected, never causes enlargement of the glands or induces secondary growths in the viscera: yet no one can doubt that it is closely allied to those cancers which do become constitutional; and in the facts that it is incurable except by excision, that it tends to return most inveterately after removal, and that it involves without distinction all structures which it comes in contact with—skin, mucous membrane, cartilage, bone, &c.—it is most certainly malignant. It would appear that about five-and-twenty years is the average duration of life in a subject of uncured rodent ulcer, death being eventually induced by purely local processes of destruction.

2. *Some forms of Cancer which do become constitutional are most certainly local at first.*—A man engages in an occupation which exposes his skin to constant contact with coal-soot. He soon becomes hopeless as to cleanliness, and only attempts the removal of the irritating material from the more exposed parts. In the course of years, on that part of his cutaneous surface on which most folds occur, and which is far beyond all others likely to harbour the soot, there are, in the presence of warty growths, evidences of irritation. In the course of a few more years, one of these so-called “warts” has enlarged and ulcerated. The disease is let alone, and by-and-by the inguinal glands enlarge and coalesce into a tumour, which ulcerates, bleeds, extends widely and deeply, assumes all the features of an open cancer, and, in the course a few months, destroys life. Does any one doubt that the bubo of chimney-sweep’s cancer is as genuine a result of the primary sore on the scrotum as is the bubo of syphilis of the primary sore on the penis? The main difference between them is that in the one a specific poison had been introduced, in the other a local morbid action had been induced by non-specific but long-continued irritation. There are other facts which prove that chimney-sweep’s cancer is an instance of the purely local origin of a malignant disease. If the ulcer on the scrotum be removed by escharotics or the knife before the glands have become affected, the disease may be cured. Of course, if the man continue to subject himself to the same irritation, he will be very likely to have a renewal of the same morbid action; or it may ensue even in one who has abandoned his calling, in

consequence of the adjacent tissues having been affected in a slight degree by the original disease. But the intervals common between operations for the removal of chimney-sweep's cancer and its reappearance are quite long enough to justify the belief that if the two sources of fallacy referred to could be eliminated, early excision would be complete cure. I have before me the notes of thirty cases in which, in different London hospitals, operations for cancer of the scrotum have been performed. In most of these there is no knowledge that any return did ever take place. In one in which the disease began at the age of twenty-one, three excisions were required in nineteen years, the man remaining throughout in good health, and appearing to be finally cured by the last. In a second an interval of twenty years occurred between the first and the second operation, the man remaining at his occupation, but, of course, being more careful as regards cleanliness. It has been argued by some, who adopt the opinion that cancer has its beginning in blood-changes, that there must be something in the occupation of a sweep which exercises an influence upon his constitution, and predisposes him to cancer; and thus, without denying that the irritation of the soot localises the disease, they will not admit that it can be considered in the light of a *vera causa*. Without venturing summarily to discard such an hypothesis, I must say that facts incline me very strongly not to believe it. Many instances are on record in which men not sweeps, but who in the course of their occupations exposed one or other part of the body to the irritation of soot have had soot-cancer there developed. I have seen it on the hand of a gardener who was accustomed to scatter soot as manure, on the hand of a bricklayer who was habitually employed in setting and resetting fire-ranges, and on the scrotum of a stoker and fireman. Analogy may also afford us strong corroborative testimony. Can any reason be offered in explanation of the fact that for every three women who suffer from cancer of the lip, there are one hundred men affected by that disease, excepting that this disease is usually caused by smoking, and is, in fact, a clay-pipe cancer? It is very rare amongst the richer classes, because they are careful to use clean and smooth mouth-pieces to their pipes.

I have tabulated upwards of 110 cases of cancer of the lip occurring in hospitals, and find amongst them 106 men and four women, whilst of the four latter two had adopted the habit of smoking, and in one other the diagnosis of the disease was doubtful. In cancer of the penis, occurring as it usually does in the subjects of congenital phimosis who have been negligent as to cleanliness; in cancer of the tongue or cheek, induced by the long-continued irritation of a broken tooth; in cancer oc-



curing in the old cicatrices of burns which have been irritated ; in melanosis supervening on congenital moles which have been scratched ; and in the not infrequent transformation of an old syphilitic ulcer on the tongue or os uteri into one of a malignant nature—we have additional instances of cancer induced locally by different forms of local irritation. In the case of a gentleman, the greater part of whose tongue I removed for epithelial cancer about three years ago, and who died two years later of return of the disease in the glands of his neck, there was the history of a syphilitic sore of several years' previous duration. The diagnosis as to its original character had been made by two medical men of great sagacity, and it was borne out by a history of syphilis and by the fact that on other parts of the organ syphilitic white-margined patches were still present. In a case of carcinoma of the cervix uteri which I saw some years ago, Dr. Oldham (with whom I saw it, and who had previously attended the lady) assured me that the sore had originally been an ulcer of syphilitic origin, and added that he had several times seen malignant disease supervene in cases of similar character. In 1848 I well recollect being much interested in a case under Mr. Paget's care in St. Bartholomew's, in which a man with stricture of the urethra had numerous urinary fistulæ in his scrotum and perineum, and in whom cancer of undoubted type developed itself about the orifice of one of the anterior fistulæ. Let no one reply that most of these instances exemplify only the connexion between *epithelioma* and local irritation, and there is an essential difference between that disease and true cancer. Epithelial cancer is as true a cancer as is the scirrhus form, differing mainly in that it occurs in parts which usually are easily accessible to the surgeon. Epithelial cancer is, as a general rule, quite as rapid in its progress to a fatal event as is scirrhus. Few cancers end, as a rule, more quickly than those of the tongue. Those of the female genitals are also often very rapid. Those of the lip and skin generally, if we date, not from the first appearance of a warty induration, but from the time when that wart began to ulcerate and took on a *bonâ fide* cancerous character, spread, when not interfered with, very rapidly—more rapidly, for example, than scirrhus of the breast.

A strong argument in favour of the local origin of cancer is, that when it commences in a part which can be watched, it may be seen that the first effects of irritation are not the production of a cancer, but simply of an irritable sore or warty induration. On the lip and on the scrotum all gradations may be observed between indurated and inflamed tubercles containing no positive elements of cancer, and the genuine epithelioma. Many so-called "cancers of the lip" are even at the time of

their removal doubtfully cancerous, being just in the transition stage between common inflammation and malignancy. Often a wart on the scrotum of a sweep, or a crack on the lip of a smoker, will remain as such for years before it assumes the features of true cancer.

The facts hitherto cited are of a positive character, tending to prove that local agencies are efficient to the production of local malignant disorders. It will now be desirable to advert to certain negative facts which favour the opinion that cancer is for the most part local rather than constitutional in its origin. In estimating their value we must keep clearly in view the difference between cancer in its commencement and in its later stages, after it has by absorption become constitutional. We have taken tubercle as a type of a constitutional malady, and have remarked that several of its characteristics clearly point in that direction. To compare it with cancer. Tubercle is usually deposited in several organs, or in several different parts of the same organ: cancer almost always begins as a solitary growth, and often continues such for a long time. Tubercle is very frequently, indeed generally, symmetrical: cancer almost never so. Tuberculous disorders are almost always preceded by ill-health, or disorder of the assimilative functions: cancer usually begins in persons in perfect health, and is followed, not preceded by cachexia. Tubercle is common in organs well protected from external irritants: cancer is more frequent in exposed parts. Tubercle often affects the lymphatic glands primarily: cancer almost never. The tendency to tubercle is hereditary in a most marked and strong degree: whilst, as regards cancer, such proclivity is comparatively rare and capricious. To these statements, as regards cancer certain exceptions undoubtedly occur. Very few facts are on record as regards the occurrence of cancer symmetrically. I have myself, during a considerable series of years, in which I have been interested in procuring instances of this kind, only seen five cases in which both mammary glands were affected, and one in which the cellular tissue of both orbits was simultaneously attacked. In most of these cases there was a history of hereditary tendency. Professor Langenbeck, with whom I had a conversation on the subject a few weeks ago, told me he thought he had not seen more than half a dozen examples of cancer of both mammary glands. I do not recollect a single instance of symmetrical cancer of bones, or of the testes, or of the eyes. There can be no doubt that symmetry in diseased processes, as a rule, denotes a blood origin, and that the want of it points to a unilateral causation.

The great arguments in support of the constitutional origin of cancer are its occurrence as a primary disease in internal and protected organs; its being sometimes hereditary; the want



of success which so often attends operations for its removal; and its not very unfrequently assuming a multiple form and occurring in many different places at the same time.

Cancer of the liver is a good example of the disease in the form in which most would be inclined to assert that it was certainly of constitutional origin. We meet it with it there in an organ with which external influences have little or nothing to do, and it is almost always seen in numerous distinct masses. But it must be borne in mind that we do not know what form the disease assumed in its very earliest stage; and I may be allowed to suggest that it is but fair to infer of cancer in hidden localities that which we know is its course in those parts which can be seen and touched. Supposing a single nodule of cancerous material to be produced in some one irritated or diseased spot in the liver, its rapid diffusion in scattered masses through the organ is easily accounted for on the absorption doctrine, on calling to mind the large vascular channels by which the liver is everywhere permeated. A similar remark applies to cancer of the lungs. I will put it as a clinical question to those of greater experience in the subject than myself, whether there is not in many cases of cancer of the internal organs a history of previous irritative disease? Cancer of the rectum occurs often in women in whom that tube has been severely bruised during a long labour. I have two patients now under observation, who assign a malignant stricture a few inches up the gut to that cause, and, I think, with a fair probability that they are right. Cancerous disease of the bowel higher up originates, I believe, not unfrequently in the cicatrices of dysenteric or tuberculous ulcerations. Many cases of cancer of the stomach occur in those who have suffered severely for long from symptoms which might be supposed to indicate non-malignant ulceration. Many other cases not preceded by local symptoms are probably due to hereditary transmission, which, as I shall endeavour to show directly, is no real exception to the law of the local origin of cancer.

The further we investigate the laws of generation, the more clearly we shall perceive that reproduction is only a mode of growth. The son is an actual part of his father; he is literally a chip of the old block; he is an outgrowth, a development, and only in a very restricted sense a new being. Whatever his father's blood was at the time he was begot, that—modified, be it remembered, by his mother's—the son's will be. A man, the subject of soot-cancer which has infected his blood, becomes a father, and should his son become cancerous, it would be quite correct to say that the disease in him was of constitutional origin, but the fact would prove nothing whatever against the assertion that the starting-point of cancer was local. Its origin

is often constitutional as it regards the individual affected, but local as regards the starting point, the disease itself. Nor would the recurrence of cancer by hereditary transmission in the representatives of several successive generations in the least alter its original character. The syphilitic virus differs from the cancerous virus in this, that after it has been absorbed into the blood it tends to go through a certain course and in due time to exhaust its power, whereas that of cancer is not subject to any such limitary law. If the son of a cancerous parent inherit such a taint as suffices to produce in him the same disease, the growth thus caused will tend to contaminate his fluids yet more, and the chance that his children may suffer, instead of being less than it was in his own instance, will be at least as great, or very possibly greater. Thus a family in which cancer has once occurred may be very long indeed before the liability can be considered as in the least diminished, since every outbreak of it is equivalent, as far as the patient's subsequent progeny are concerned, to relighting of the fire in all its pristine vigour. It is a matter of wonder with some writers that a disease so clearly capable of transmission to offspring as cancer often is, should not more commonly be traceable to hereditary causes. The difficulty is, I take it, to be explained by the fact that cancer for the most part does not show itself until about the end of the child-bearing period, and that therefore but few children are born the offspring of parents either of whom actually had cancer at the time. Were it not for this—were cancer a disease like syphilis, frequently suffered from before marriage—no doubt the community would soon become very extensively affected with cancerous taint.

The opinions which I hold may perhaps be best illustrated by a hypothetical case. If a thousand men and the same number of women, all free from the remotest hereditary tendency to cancer, could be made to constitute an isolated community; if circumcision of the males were always practised, smoking strictly prohibited, all broken stumps of teeth promptly removed, all nævi and moles excised, and the most precise personal cleanliness enforced, I should expect many generations to pass before cancer showed itself. When it did show itself, as it would undoubtedly in a longer or shorter time, the consistent development of the theory in question would lead to prompt adoption of surgical measures, if the case admitted of them, to the prevention of the affected person from becoming a parent, and possibly even to the prohibition of marriage in the case of the child last born to him, if such birth had occurred within a short period of the outbreak of the cancer. In avowing a belief that measures such as these would



be calculated to restrain the spread of cancer, it will be seen that I differ *toto cœlo* from the opinions of those who consider cancer a disorder of blood origin. And it will be seen at a glance that the question as to which opinion is right and which wrong is one of very vital consequence in the practice of surgery. To return to the more strictly practical aspects of the matter, it may be freely admitted that the assertion that in theory cancer is at its *fons et origo* a local disorder is a very different one from an averment that in practice we may treat any individual case as if it were so. A vast number of the cancers which we encounter are, as regards the individual, strictly constitutional, or in other words hereditary. Then, again, it must be remembered that a vast number, although local at first, have become constitutional in the individual, owing to absorption of the cancerous plasma. Only a few of those which come under our observation are still restricted to the place affected and susceptible of successful treatment by local measures. The following circumstances ought always to be deemed suspicious as to the existence of general taint:—

1. *Whenever the disease is symmetrical.*—There is at present under the care of Mr. Adams, in the London Hospital, a woman, aged only twenty-nine, both of whose mammæ are consolidated into hard masses of infiltrated carcinoma. In both axillæ are enlarged glands. The disease began in one breast four years ago, in the other only about six months ago. She has still the appearance of fair health. No one will doubt that in such a case the disease is constitutional, and no sane surgeon would think of local interference. There is a clear history of hereditary tendency. The boy, whose portrait I now produce, came up to the Moorfields Hospital from Lincolnshire in 1858. He was under the care of Mr. Critchett, and suffered from symmetrical cancer, which appeared to have commenced in the cellular tissue of both orbits. He died of the disease at the age of six, about eighteen months from its outbreak. In his case also there was a clear history of hereditary tendency; and such, I suspect, is generally the fact when cancer is developed symmetrically.

2. *When the patient is young.*—As a rule, when young persons are attacked by cancer, there is a history of hereditary tendency; but, whether such be the case or not, the disease is usually constitutional. It must always be remembered that the not being able to obtain from the patient's friends a history of cancer in relations does not by any means prove that no instance of it has ever occurred.

The portrait which I now display is that of the youngest patient, the subject of cancer of the testis, I have ever seen. The boy was only seventeen months old when his left testis

began to enlarge. I removed it when he was two years old. He recovered well, and regained his health; but the disease returned in his lungs, and he died when three years old. Previous to the enlargement of his testis he was a remarkably fine, healthy boy. In his case also there was a history of inherited taint, two paternal aunts having died of cancer of the breast.

3. *When the growth is unusually rapid in its development.*

4. *When there is no history either of injury or of source of irritation,* more especially if the organ attacked be one which is well protected.

The cancerous process may be attended with very varying degrees of inflammatory action. The more rapid the growth, the more marked is the attendant inflammatory action, leading to ecchymoses, to softening, ulceration, and even to abscesses. Cancers of the breast suppurate not unfrequently, and it is very common indeed for abscesses to form in secondary glandular tumours consequent upon epithelial cancer of the skin.

The more succulent a cancer is, the more likely are the absorbents and internal viscera to become involved. Thus, medullary cancer is well known to run the most acute course; next to it, the melanotic variety; and were it not that the successes of surgery disturb the statistics, I have no doubt that epithelial would be admitted to stand third. When once an epithelial sore has assumed its characteristic features, and begun to ulcerate and spread, its advance upon the lymphatic glands is very rapid. On the other hand, scirrhus of the breast, especially when very hard in structure, is often for considerable periods unattended by gland-mischief, and runs a comparatively slow course. Epithelial cancers are very erroneously regarded as less malignant than true scirrhus.

In proportion as there are grounds in any individual case for regarding the cancerous action as of local origin is the hopefulness of the prognosis after an early operation. Now, nearly all epithelial cancers, beginning as they do on exposed surfaces, are of local causation, and hence better results are obtained after the removal of these than of the other varieties of cancer. Were they neglected, however, they would run through their course as rapidly as any. In estimating the whole duration of an epithelial cancer we ought to count not from the first appearance of a wart, but from the date at which the wart passed into cancer and began to soften and ulcerate.

If we adopt the view that cancer when it begins *de novo* in an individual—*i.e.*, not hereditarily—is a local disease which tends to become constitutional by the absorption of its fluid elements through the lymphatic system and thence into the blood, the following rules as to its treatment follow as a matter of course:—



1. Primary cancers ought whenever accessible to be excised, or otherwise freely and promptly destroyed.

2. Since the process of absorption into the system is simply one of time, and since the prevention of it is the one point of importance to the patient, all operations for the removal of cancers ought to be done without any avoidable delay.

3. If the lymphatic glands are in the least enlarged they ought to be taken out, the entire cluster being removed—as well those which are not enlarged as those which are.

4. If the disease return, either in or near the cicatrix, or in the proximal lymphatics, it ought still to be regarded as possibly local, and a second free excision promptly undertaken.

5. After an operation for the removal of a cancer the patient and his friends ought to be informed of the probability that the glands may enlarge, and impressed in the most forcible manner with the absolute necessity of immediate recourse to the surgeon should such be the case.

6. After the excision of a cancer which has involved the removal of a considerable portion of integument, great care should be taken, either by transplantation or other manœuvre of plastic surgery, to secure a limp cicatrix which shall be wholly free from tension.

7. The removal of cancers by escharotics is a practice to be avoided (excepting perhaps under certain unusual circumstances), for the simple reason, if for no other, that it wastes invaluable time, and consequently involves increased risk of the contamination of the system.

The want of success which has attended operations for cancer, and the comparative discredit into which they have consequently fallen, are to be attributed to the fact that such measures are, in the large majority of instances, not adopted until too late. In many instances these delays are unavoidable; but in many others, were the views of the profession generally a little modified on these matters, they might easily be obviated. In how many cases of scirrhus of the breast does the surgeon who first sees the patient waste many months in the vain trial of constitutional remedies, in the hope, it may be, that his suspicions as to the nature of the lump may not prove correct, or, it may be, regarding an excision not as a means of possible cure, but only as a mode of temporary alleviation when the growth shall have become painful! Again, in numerous cases in which the surgeon relies boldly on his diagnosis, and advises an immediate operation, the tumour being as yet small and painless, the patient, alarmed at the proposal, seeks other opinions, and thus becomes herself responsible for a delay which will cost her her life. No one can for a moment doubt that there is a stage in the development

of every chancre at which amputation of the penis would absolutely prevent the entrance of the virus into the system; yet, supposing such a mode of practice to become prevalent, it is certain that it would soon fall into discredit and disuse as being unsuccessful if it were adopted indiscriminately at all stages of the sore. Uncertainties in diagnosis are undoubtedly the great hindrances to early operations for cancer. Now, if the removal of the suspected cancer involve the amputation of a limb or the excision of a testis, I can easily understand that both surgeon and patient would like to obtain a very positive notion as to the real nature of the disease before resorting to it. But if, on the other hand, the proposed operation involve no more than the excision of part of a lip, or of a few lobules of one mammary gland, or of a portion of skin, I cannot see why we should be so scrupulous. Is it not a much greater error in practice to leave a true cancer untouched for several months than to cut away a mass of diseased tissue which may, perhaps, prove not to be cancerous? If doubt be felt, however, exploratory incisions and the employment of the microscope on the spot will generally suffice to prevent any such error in practice; and in the case of the testis and the limbs the same measure ought also always to prevent any harmful delay.

With regard to the removal of diseased lymphatic glands, great difference in practice prevails amongst the surgeons of our hospitals. Some surgeons always decline the operation if the glands are enlarged, whilst others make a point of removing both tumour and glands if the latter be accessible. One or two surgeons, who have had considerable experience of the practice of removing the axillary lymphatics when diseased from cancer of the breast, tell me that some of the best cases (*i.e.*, with the longest period of health afterwards) have been those in which the glands had been removed—a circumstance which on the local origin theory is easily explained. I have myself invariably adopted the practice of removing enlarged glands in cancer whenever practicable, and have repeatedly excised them from the axilla in cases of cancer of the breast, from under the jaw in those of cancer of the lip, and from the groin in those of cancer of the genitals. In none of these situations, provided the glands are movable, is the operation one of much difficulty or attended by risk of injury to any important vessel. Having laid bare the glands with the knife, it is good practice to pull rather than cut them out—that is, provided they are not adherent—since by so doing you take away not only the gland, but a portion of the lymphatic trunk also, which may very possibly contain cancerous virus. Every gland which can be found should be removed, for two reasons—first, because it



is never certain that any gland of size sufficient to be felt may not be cancerous; and secondly, because one object of the operation is to break up as completely as possible the channels of communication between the original disease and the vascular system. The lymphatic trunks are to be regarded as the drain-pipes by which the cesspool communicates with the river, and if you wish to prevent the pollution of the stream you must take them up. A patient whose lymphatic trunks have been interrupted has an actual advantage over one from whom only the original tumour has been removed, since, supposing both should have recurrence of the disease in the part originally affected, the difficulties opposed to the absorption of the virus will be much greater in the one than in the other. It is very common in cases of cancer about to be submitted to operation, and in which a few lymphatic glands are slightly enlarged, to hear it advised not to remove them, as in all probability the engorgement is due merely to irritation, and will subside after removal of the original disease. Now, with all respect to the many excellent surgeons from whose lips at different times I have heard remarks to this effect, I must record my emphatic dissent from its wisdom. It is perfectly true that enlarged glands often subside after the removal of the local cancer which had caused their engorgement; it is quite true that if you excise them at that stage you will find them simply enlarged and succulent, and without any perceptible deposit of cancer in the structure. In spite of these facts, however, they are better removed. In such cases the chance is very great that their apparent subsidence will be but temporary, and that when you next see your patient he will come with a large adherent mass which could not be extirpated without much danger. It is very easy and very safe to extirpate glands which are loose and not larger than beans or hazel-nuts, but it is much otherwise if they form a hard, conglomerate, adherent mass. The delay, too, has in all probability allowed deeper lymphatics to become involved. The succulent stage of enlargement is one which precedes that of cancerous infiltration—a fact of which anyone may satisfy himself who will carefully examine a group of glands of various degrees of enlargement removed from the the same patient.

In conclusion, I will venture to sum up as follows:—Cancerous action is to be regarded simply as a morbid form of nutrition educed in certain temperaments and at certain ages by local irritation. It becomes constitutional by the direct absorption of the plasma and cell-elements of the new growth; and in proportion to the succulency of the new growth is, as a rule, the rapidity with which the blood becomes contaminated. Like all other blood-diseases, cancer in its second, or constitu-

tional, stage is liable to be transmitted from parent to child. The worst and most rapid forms of cancer are those which occur in young persons as the consequence of hereditary taint. In many of those who have inherited distantly a cancerous taint, local irritation is the means of evoking such taint into activity, and in such cases the resulting disease is to be regarded partly as local and partly as constitutional. That it is a fact beyond dispute that some forms of cancer are in their early stages purely local, and that they are curable by local means. That as in most cases it is impossible to estimate the degree of constitutional predisposition, it becomes the duty of the surgeon, whenever feasible, to give his patient the benefit of the doubt, and remove the disease *immediately it is discovered*, in the hope that it may prove to have been merely local.—*Medical Times and Gazette*, January 22, 1881, p. 92.

---

## 12.—CASES OF EPITHELIOMA.

Under the care of Mr. HULKE, at the Middlesex Hospital.

The local, as distinguished from the constitutional, origin of cancer,—using the term constitutional as equivalent to dyscrasial, implying a specific faulty state of all the tissues, including amongst these the blood, a taint of the whole being—finds strong support in the genesis of epithelioma. In the life-history of many cases of this form of cancer, there are to be recognised, first, a faulty, damaged condition of the part where the cancer makes its appearance; next, general tissue-changes incidental to advanced age; and thirdly, an extraneous local injury or irritation. Neither of these factors is in itself sufficient, but the concurrence of all three seems necessary for the evolution of an epithelioma.

The origin of epithelial cancer in scars has been so frequently observed, that the association cannot be of the nature of a mere coincidence. Its very frequency shows that this association is not fortuitous, and justifies the conviction held by many authorities that the relation is really causal. If it be inquired, whether some sorts of scar are more prone than others to become the seat of epithelioma, and if so, what kinds of scars have this greater liability; the answer is to be found in the scar itself, rather than in its cause. The more perfect its imitation of the natural structure, the less appears to be its proclivity; and the more it falls short of this pattern, the greater is the probability that epithelioma may arise in it. The nature of the original injury does not appear to be of moment, except in so far as it influences the rate and degree of repair. Where cicatrisation has very slowly progressed, the scar has long retained its early vascularity, and its cuticle is



very thin, then epithelioma may be expected, rather than where a wound has cicatrised quickly, the scar has soon lost its primitive vascularity, and its epidermal layer closely resembles that of the surrounding skin.

In illustration of this, two cases, some time since in the Middlesex Hospital may be briefly cited.

*Case 1.*—A middle-aged woman was admitted with an ulcerated warty epithelioma of the size of the palm, on her back, in the middle of an extensive scar which reached from the shoulders nearly to the hips. Her history was, that she had been severely scalded in childhood, the wound had healed very slowly, and the middle of the scar had long remained bluish and tender. Nothing, however, befell it till she had reached middle life, when, a few months previously, a lunatic whom she was nursing pushed her roughly against a chest of drawers, one of the corners of which chanced to strike the tender part of the scar, slightly grazing it. Soon afterwards, she received another slight injury at the same spot. These little hurts, had they happened to sound integument, would very probably not have been productive of evil, but falling on the scar were soon followed by a warty upgrowth, which rapidly increased, and before long gave unmistakable evidence of being an epithelioma. Here the scar resulted from a burn.

*Case 2.*—A farm-labourer, aged 60, was admitted into Forbes ward with a warty ulcerated epithelioma, implicating a large part of the back of his forearm. He said that in boyhood his forearm had been crushed by a waggon-wheel. The bones were badly broken, and the flesh much squeezed and torn. The wounds, he was told, did not heal for about two years. In spite of a crippled limb, he had done the work of a country labourer. One part of the scar was thinner than the rest, and more tender; and here, when he was past middle life, a small wart grew up. This, when it became troublesome through its size, he was wont to pare down with his knife. At first no blood was drawn in doing this, but after some time the wart bled when he pared it. After this it grew very quickly, and before long was unmistakably an epithelioma.

*Case 3.*—*Epithelioma in the Calf.*—In the following case, the scar resulted from what was probably a syphilitic gumma. The patient was younger in years than those first mentioned, but older in tissue-degeneration. She was clearly not a favourable subject for any operation, but it did not appear to be right, in face of her great suffering, to withhold amputation. She was admitted on April 20, 1880, into Queen ward, with a large warty ulcer of the right leg. It had destroyed the whole calf, and encroached upon the sides of the leg. The floor of the sore was very irregular, in some places greyish and sloughy, in

other parts beset with masses of more than usually exuberant granulations. The discharging was very profuse, ichorous, and stinking. The skin from the knee nearly to the ankle was eczematous. The patient was a stout blonde. She had always lived very freely, and latterly had been driven by sleeplessness and suffering to take large quantities of alcohol. She had acquired syphilis from her husband soon after marriage, in her twentieth year. She had borne two dead children; her hair had fallen off, and she had had an ulcerated throat. Six years later a knot—from her description probably a gumma—came in the right calf, which broke, and was long an open sore, healing several times unsoundly, and breaking open again before it finally perfectly healed. In this scar the epithelioma began as a wart, to which she did not for some time pay much heed; indeed, she had only thought it of importance about three months previously, when its progress became very rapid, and she began to suffer much. On May 12th, the limb was amputated just above the femoral condyles. Very little blood was lost, but the shock was very great. Her temperature during twenty-four hours was under 96° F., and her face and surface generally were bedewed with a profuse cold sweat. After rallying from this, with the exception of occasionally being sick after taking food, she made fair progress, the stump looking well, until June 1st, when she became rather suddenly breathless, the wrist-pulse was soon imperceptible, a cold sweat broke out, and she quickly died. At the examination of her body, an *ante mortem* clot was found in the pulmonary artery, reaching into its larger branches, and in the right ventricle. Both the pulmonary artery and aorta were atheromatous.

*Case 4.—Epithelioma of the Lower Lip.*—In few cases of cancer can surgery offer a longer respite than in those of epithelioma of the lower lip, where excision is practised very early and freely whilst the cancer is still limited to the border of the lip, and the glands are uninfected. Even in a somewhat later stage, when the epithelioma has spread into the lip beyond its free border, and even where near-lying lymphatic glands are involved, free excision, unless there should be other circumstances forbidding it, will frequently be preferable to allowing the cancer to run its course, which is what, in the present state of our art, really happens when operative interference is withheld. The terrible distress which cancer in its later stages when occurring in this situation entails (scarcely less than when situated in the mouth) is well shown by the following case, where, deluded into false security by illusory promises held out to him, the patient's condition had become perfectly hopeless at the time he entered the Middlesex Hospital. Nothing remained but to soothe his sufferings by opium and



nourishment, and to destroy the foetor with iodoform. He survived his admission only four days.

A waxy, pale, sallow-faced man, aged 39, in a state of extreme exhaustion, was taken into Handel ward on the first day of this year (1881). His entire lower lip and the soft parts of the chin had been eaten away by ulceration, laying bare the teeth and the body and symphysis of the jaw. Patches of necrosed bone, bunches of coarse warty granulations, and grey sloughy shreds formed the bottom of this great gap. Its edges were sharp, raised, indurated, and of a dusky reddish tint; characters which had no abrupt definite limit, but which, spreading into the cheeks and under the chin to considerable distances, gradually disappeared. At the angle of the jaw and in the neck were large prominent bosses—infected lymphatic glands. A copious stinking ichor, poisoning the air he breathed, mingled with saliva, which, in the absence of the lower lip, incessantly dribbled, saturated his clothes. A more ghastly piteous sight could hardly be conceived. He said (and his statement was confirmed by his friends) that his disorder had begun about twelve months before, as a little knot, of the size of a pea, upon the red edge of the lower lip. A surgeon, whom he consulted, advised him to have this removed; but he shrank from having this done, and went to a hospital where cancer is alleged to be cured without the use of the knife, which he continued to attend during seven months. At the first visit the surgeon by whom he was seen told him, he said, that he could cure him, and this assurance was given him on several subsequent occasions, and even as recently as between one and two months ago.

*Case 5.—Epithelial Cancer of the Palate.*—It is an interesting question in this case, whether the man's calling had any causal relation to the occurrence of the cancer (he was a sweep); or whether the association was a merely fortuitous coincidence. It is a well established fact that, since climbing has been stopped, and the importance of greater cleanliness has been recognised by sweeps, epithelioma of the scrotum has become much less frequent than formerly. However careful a sweep may be, it is scarcely possible that, when working in a soot-charged atmosphere, some should not enter the nasal passages and mouth in inspiration; and, if so, irritation of the surfaces of the velum palati is very probable. That such irritation, when frequently renewed, might, with the concurrence of other factors—*e.g.*, age, large glandular development of the mucous membrane in this situation—become sufficiently intense to provoke the evolution of an epithelioma, will scarcely be denied.

—, aged 53, a sweep, whose face was much pitted with the

scars of small-pox, was taken into Handel ward on December 7th, 1880. The soft palate was split, in its whole depth, by a ragged ulcer, the edges of which were raised, very swollen, and hard. The lateral remnants of the velum were very thickened; their buccal surface was tuberosus; they had wholly lost the suppleness natural to them, and were stiff and rigid. This hard infiltration had extended to the faucial pillars and the tonsils; and the lymphatic glands under the angle of the jaw and along the sterno-mastoid were also swollen. He related that about a year before, whilst at work, he was startled by bleeding from his nose and mouth. This ceased some time later. On consulting a medical man, for what he had supposed to be a cold, he was told that his throat was ulcerated. This had been thought to be syphilitic; and, on this supposition, mercury had been given to him, in spite of which the disease progressed.

At the time he entered the hospital, the amount of infiltration about the ulcer made its being mistaken for a syphilitic ulcer no longer possible. The extension of the infiltration to the muscles of the jaw has now nearly fixed it. He has been much exhausted by a profuse hemorrhage, and the end is evidently not far off.—*Brit. Med. Jour.*, Jan. 15, 1881, p. 87.

---

#### DISEASES OF THE ORGANS OF CIRCULATION.

---

### 13.—ON THE DIAGNOSIS OF THE FATTY HEART.

By Dr. J. MILNER FOTHERGILL, Senior Assistant-Physician to the City of London Hospital for Diseases of the Chest.

There are few matters in practice which give the medical man more thought than the decision as to whether there exists "fatty degeneration" in a patient's heart, or merely a condition of "asthenia." It is a very difficult matter to decide, and he has not much to guide him. There is a mysteriousness about the fatty heart which adds much to the general dread of it, both in and out of the profession. When there is a murmur to be heard his way is pretty clear before him; for a knowledge of valvular lesions, at least as regards their diagnosis, very generally obtains now. The practitioner is guided by the murmur to a pretty fair diagnosis. When there is no murmur, and no very perceptible evidences of dilatation, and yet there are subjective symptoms of cardiac asthenia, together with feeble impulse, and the sounds indistinctly heard: he is puzzled. Nor is this a matter for surprise. Beyond its strictly pathological interest the student hears little of fatty degeneration. He is shown the dead-leaf colour of the ventricle, and the rows of beads of fat within the sarcolemma in advanced cases, and the



loss of striation with fat granules in fibrillæ commencing in fatty necrosis; but clinically he hears little of it in life, or only vaguely spoken of. The mystery which hangs round it is not dispelled in his student career, and he has something else to occupy his mind when he becomes engaged in general practice.

It is however no unimportant matter: and I shall here attempt to remove some of the weird drapery of mystery from it, and give it some distinctness. I will commence by giving its diagnosis from the recent edition of Dr. Da Costa's valuable work, *Medical Diagnosis*:—

“Our power to recognise the change during life has not kept pace with our power to recognise it after death. There is as yet no sign discovered by which we can positively say that the dangerous disorganisation of the muscular fibres of the heart is in progress. We may however suspect it, if the signs of weak action of the heart—feeble impulse and ill-defined sounds—co-exist with oppression, with a tendency to coldness of the extremities, with a pulse permanently slow or permanently frequent and irregular, and be met with in a person who is the subject of gout, or of a wasting disease, or is very intemperate, or has arrived at a time of life at which all the organs are prone to undergo decay. Something more than a suspicion is warranted if, in addition, there be proof of atheromatous change in the vessels, or of fatty degeneration elsewhere, such as an *arcus senilis*; or if it be ascertained that the patient suffers pain across the upper part of the sternum and from paroxysms of severe pain in the heart; that he sighs frequently; that he is easily put out of breath; that his skin has a yellow greasy look; that he is subject to syncope, or to seizures, during which his respiration seems to come to a standstill; and that he is liable to vertigo, or to be stricken down with repeated attacks having the character of apoplexy, save that they are not followed by paralysis.”

Such is a vivid sketch, by a master-hand, of a malady whose features are irregular, to say the least of it. There is however a group of phenomena very suggestive. First there is evidence, from physical examination, as to the want of vigour in the heart; of arterial anæmia in cold extremities, and a defective pulse; of dyspnoea easily excited; of syncope; and of acute anæmia of the brain in vertigo, and strokes resembling, for the nonce, apoplexy. And these are rendered more than suggestive if there be also evidence of atheromatous change in the arteries, and of fatty degeneration elsewhere. He pays myself the compliment of being the first to point out the “true” as distinguished from the “false” *arcus senilis*.

You will perceive that the evidences of cardiac asthenia, objective and subjective, are regarded as only creating suspicion;

but the addition of evidences of degeneration elsewhere, convert mere suspicion into fair certainty. Fatty degeneration of the heart is not a disease *per se*, except in the very rare cases where a pericardial adhesion exists over a coronary artery, and the heart wall is thus deprived of its supply of nutrient blood. Then it is a disease *per se*: ordinarily it is a part, a fragment of a widespread degenerative change. That is the point to keep steadily in view. It is not, as a rule, an occult process of which no sign is given, and the individual knows nothing of it till he awakens up on the other side of the grave. As a rule with few exceptions, it has such distinct associations that if they are not found it is very unlikely to be present. Most commonly it follows upon once existing hypertrophy, where the coronary arteries become all but obliterated by atheromatous change. When so found, the heart is heavier than the normal weight; albeit its muscular fibre may be extensively degenerate. If these associations were only generally known and recognised, error would be avoided, or largely so, of diagnosing a fatty heart in cases where it is feeble from atrophy or malnutrition. Wasting disease impairs its integrity: so do fevers ultimately, but here, repair swift and complete, is the almost universal rule. Youth is not the season of the fatty heart. Even middle age is not frequently its seat, except with persons who have broken themselves down with drink and debauchery. The fatty heart is the usual concomitant of senile degenerative changes.

Even when the physical signs suggesting fatty degeneration are found in elderly persons with hard arteries, the suspicion may not be confirmed; the symptoms may be due to malnutrition, as the effects of treatment ultimately demonstrate.

The condition which simulates the fatty heart most closely, and is the cause of most of the errors made in its diagnosis, is that due to mal-assimilation, and which may fairly be denominated "Heart Starvation." This is quite a common malady. The assimilative powers are defective, especially as regards the proper and thorough digestion of albuminoids. Consequently the tissues are badly nourished, and the heart suffers especially. Nor can this be any matter for surprise. The heart must go on: and so must the diaphragm, else the organism would perish. The other muscles may rest when hungered, but these two must go on with their ceaseless round of duty. The result is, these two great muscles are starved. The heart's impulse is feeble, and its sounds weak and ill-defined. There is a small compressible pulse, and other evidences of a defective circulation. The impairment of the action of the starved diaphragm is seen in dyspnoea readily produced. The *tout ensemble* resembles that of the fatty heart so closely that the mistake is one easy to make.



To avoid such a mistake it is necessary to remember the associations of the fatty heart as given above. They are usually absent in "heart starvation"; found sometimes in old persons where the two conditions may coexist in some cases, but absent in younger persons. On the other hand, in heart starvation the signs of degenerative change elsewhere are absent. But there are actually present loss of appetite, deficient hours of sleep, the positive signs of indigestion, and the evidence of deficient action of the liver, pale stools, deposits in the urine, and the characteristic tongue. Usually too there are sundry nervous symptoms due to defective nutrition of the nervous system. There is depression with irritability; the brain is at once underfed, and poisoned with the products of mal-assimilation. There are the localised spots of pain found when the blood is charged with nitrogenised waste, usually at the inner edge of the lower angle of the shoulder-blade; less frequently near the apex of the heart, or in or over the pectoral muscle. Imperfect attacks of genuine vaso-motorial angina are common, from the waste-laden blood producing spasms of the small arteries and arterioles. The resemblance, it must be admitted, is sufficiently close to deceive many, especially if they are not very familiar with the diseases of the heart—other than valvular lesions, which are pretty generally well understood. Of course too "heart starvation" may pass on to "fatty degeneration" if the coronary arteries are diminished in their calibre by atheromatous changes, or blocked by atheromatous masses at their orifices. But "heart starvation" is a disease of early and middle life, associated with over-work and defective digestion, most commonly seen in persons of the neurosal diathesis. It is thus associated with mal-assimilation; and not with degenerative changes in elderly persons.

When the assimilative processes are once more restored to their normal efficiency the alarming symptoms pass away; and the nature of the case is cleared up.

A long debauch, where alcohol almost alone is taken, leaves the heart starved, and a condition very closely resembling fatty degeneration of the heart is induced. Probably there is actually some fatty decay of many of the fibrillæ which wear out and are not repaired, because of the absence of albuminoids in the food. Such fatty necrosis is quite common after sustained high temperatures, notably after relapsing fever; and is repaired when the assimilative processes are restored.

Consequently we see that the conditions of the heart as a muscle are what we wish to become familiar with. The valvular diseases have been well worked out and are generally taught well, and are generally known. To detect a murmur and to associate it correctly with its proper value, is what most prac-

tioners can now do with much accuracy. But it would not be truthful to say that any equal familiarity with the heart as a muscle, liable with other muscles to be affected by malnutrition, does exist. It is in consequence of this unfamiliarity with the heart as a muscle that errors are made. When the heart becomes dilated then the case is much clearer. But in many cases there is not any marked or noticeable dilatation to be observed: there is no alteration in size, only asthenia and deficiency in functional power. The more general recognition of this fact would follow if the plates of Rindfleisch illustrating acute softening of the heart were more universally known. By the permission of the New Sydenham Society I have been enabled to give them in the second edition of *The Diseases of the Heart, with their Treatment*, including the Gouty Heart. There the reader, if so disposed, will find the subject of fatty degeneration due to tissue decay, and the question of its repair, considered. I cannot pursue the subject here.—*Practitioner*, April 1881, p. 268.

---

#### 14.—ON PAROXYSMAL ANGINA PECTORIS AND ITS TREATMENT.

By Dr. GEORGE W. BALFOUR, F.R.S.E., Physician to the Royal Infirmary, Edinburgh.

Generally the first attack comes on as the patient is ascending some slight acclivity, or making some trifling exertion, possibly after a meal. He is suddenly pulled up by an excruciating pain shooting through the lower part of his sternum to his back-bone, often accompanied by a constrictive feeling, as if his chest was grasped by a mailed hand; the pain may remain localised, or it may shoot towards the shoulder down the left arm by preference, or down both arms. These are its most usual courses, but it may also occasionally shoot down the abdominal and lumbar nerves. The patient is at once brought to a standstill; he fears even to breathe, but if he chooses to make the effort, he can breathe freely enough; he feels a sensation of impending death, and a ghastly paleness overspreads his countenance. The pulse may intermit, or be feeble or irregular, but it is sometimes—especially if the angina be uncomplicated by any other cardiac disease—quite regular throughout the whole of the paroxysm. After a few seconds the pain ceases as suddenly as it came on, and the patient finds himself as he was, puzzled to know what has happened to him, and terrified at the prospect of a recurrence of the attack. There is in this seizure nothing pulmonary; the air enters freely into the lungs if the patient has courage to breathe, and full inflation of the lungs has no influence upon the attack. It



has no apparent connexion with cardiac or spasmodic asthma, neither does it arise from cardiac strain, or at least from any immediate and recognisable cause of strain. At first it seems to originate in some trifling exertion, or in some emotional excitement of the heart's action, but presently not even these exciting causes are necessary, and now and then, as we have seen, even the primary attack is without any such provocative, the patient waking from sleep in a paroxysm of anginous pain. In most cases it is not till after several and often numerous attacks, brought on by trifling exertions, that the disease arrives at such a pitch as to occur when the patient is asleep or at perfect rest, but sooner or later it reaches this stage.

Neither excruciating nor commanding are words strong enough to express the character of the pain in this affection; it seems to be something appalling, it unnerves the strongest mind, and death itself seems preferable to the repetition of a similar seizure.

Should death be the result of such an attack, the heart is found loose, flabby, and uncontracted—not exactly the condition in which one would expect to find it were death due to spasm, as is supposed by Latham, Heberden, and the older writers, but very much as it ought to be were death due to inhibitory paralysis, as Parry, Stokes, and Walshe usually suppose. And the history of the mode of death in this disease corresponds thereto, for in such cases death is not usually instantaneous, as would be the result of a suddenly fatal spasm of the heart, but commonly occurs from a gradual sinking of the aortic pressure, the result of an equally gradual diminution of the heart's force, the pulse getting feebler by degrees until it ceases, and never passing at once from its ordinary force to a full stop, as would be the case in sudden cardiac spasm. Moreover, the pathology of angina pectoris as a neuralgia of the cardiac nerves is in accordance with this view of the cause of death, for we know that any sudden and violent pain produces sickness, faintness, and depression of the heart's action; and we also know that whatever produces depression of function in the fibres coming from the posterior root of a spinal nerve, and as its result pain or neuralgia, produces also depression of function of motor fibres coming from the anterior root of the same nerve, and as its result subparalysis of the parts to which they are distributed. Hence we have in angina pectoris two distinct sources of depression of the cardiac action: first, we have the directly depressing influence of a pain, the most acute and severe which the human frame can experience; and second, we have the action on the cardiac motor ganglia of the same cause which, acting on the sensitive nerves, gives rise to this excruciating agony, and we cannot but suppose that as a rule the func-

tional depression of the motor nerves is not much less than that of the sensitive ones, that is, that the subparalysis of motion must bear some proportionate relation to the acuteness of the pain, which is the index of the functional depression of the nerves of sensation.

Our forefathers had nothing to trust to but the external application of cutaneous irritants, and the exhibition of stimulants and narcotics by the mouth; a vain hope, when moments are precious, and to the time needful for absorption—twenty minutes in the most favourable circumstances—was superadded the further delay occasioned by a failing circulation. Modern discoveries have changed all this; we can now by inhalation thoroughly narcotise a patient in a few seconds, and by means of hypodermic injection secure in ten minutes a painless unconsciousness which will last for many hours.

Foremost among all our modern appliances for the relief of this dreadful breast pang we must place the nitrite of amyl; it is perfectly safe, and may be entrusted to the patient with the certainty that he will not injure himself by its use; in all slighter attacks it serves to give perfect relief, and in more severe paroxysms it alleviates even when it cannot completely remove the pain. It flushes the face, quickens the heart-beat, and has been experimentally found to lower the blood pressure in animals to whom it has been administered. It was originally employed by Dr. Lauder Brunton in the treatment of angina, on the supposition that this depends upon increased intra-arterial blood-pressure. I quite agree that in all cases of angina, the blood-pressure is probably always above the normal, but that it is abnormally increased at the moment of seizure has not yet been proved, and, so far as I know, is incapable of proof. The supposition of Dr. Brunton that the case is so rests solely on a single sphygmographic tracing from the radial artery; but a pulse-trace only represents the local movement of the arterial wall, and for many obvious reasons can never be accepted as a correct indication of the intra-arterial blood-pressure. Further, if we accept the face-flushing as a proof of lowering of the blood pressure, then I am in a position to state that two specimens of nitrite of amyl will flush the face in apparently the same degree, yet only one of these will relieve the pain. The specimen which relieves the pain is one which has been freshly prepared, or which has been kept in a hermetically sealed capsule. The other specimen, which does not relieve pain, has been kept for some time in an ordinary stoppered bottle. I make these statements from a large experience of the use of the nitrite of amyl, and chiefly base them on two cases, both of whom suffered for years from terrible angina. One of these cases had a loud, musical diastolic aortic murmur, and he never



felt well unless his wife could hear this murmur across the dinner table, a condition indicating, of course, a much greater blood-pressure than when the murmur ceased to be audible and his sufferings began. During the last few years of his life he used many pounds of nitrite of amyl, having it constantly with him, and inhaling it when required. His face was always fully flushed, and a certain amount of relief obtained, but this relief was only rapid and complete when the specimen employed was perfectly freshly prepared. The second case was somewhat similar. The sufferer was a medical man, and he used to soak his pocket handkerchief in the amyl and go to sleep with it on his face. The conclusion I have arrived at from these facts is, that the relief to the pain of angina is obtained, not from lowering of the blood-pressure, but from the action of a volatile narcotic, which gradually escapes from the amyl when kept, unless it is enclosed in hermetically sealed glass capsules. As these are now readily obtained, we possess a remedy which can be safely entrusted to the patient, and which is certain to give relief in all ordinary attacks.

When the attack is a severe one, the amyl fails to give relief, however freshly it may have been prepared; of this I have been assured by many sufferers, and have myself repeatedly had occasion to observe it. Then our only resource lies in chloroform, which can only exceptionally be entrusted to the patient, but ought always, if possible, to be given by a medical man. It must be given freely, so as completely to narcotize the patient; and, when so given, I myself have not yet seen any case which was not relieved, though I have seen several in which the relief was not permanent enough to place the patient in safety. In these cases I have had recourse to the subcutaneous injection of morphia, using by preference Squire's solution of the bimeconate, of which I have injected half a drachm into each arm, without removing the clothes or in any way disturbing the patient. This, as yet, has never failed me: the chloroform sleep has passed into the morphia sleep, from which the patient has woke up some hours subsequently, free from pain, but exhausted, as we can readily suppose, and usually with some oedema of the lungs. You see, then, that I have no dread of chloroform in these cases, and by no means homologate Anstie's statement, that "the only kind of chloroform inhalation which would be useful in such cases would be that in which a carefully measured small dose of a weakly impregnated atmosphere should be inhaled, and without large experience in the administration of chloroform the practitioner will be unable to secure this effect with certainty; and the effect of a *powerfully* charged atmosphere, breathed only once or twice even, would be instantaneously fatal." You have seldom an oppor-

tunity of seeing the usefulness of chloroform in angina pectoris in the wards, but you have all at least occasional opportunities of seeing its beneficial action in other kinds of cardiac pain; and what is safe enough in aortic regurgitation, for instance, cannot be dangerous in angina pectoris. Many years ago I knew an individual who was forbidden to take chloroform on account of a cardiac valvular lesion under which she laboured, and yet for long she secretly indulged in chloroform intoxication without any fatal result. So far from being unsafe in cardiac disease, it is often of the greatest use in these cases; it not only relieves pain, but regulates the circulation, now and then bringing the pulse back to the wrist, whence it had apparently fled for ever. In peritonitis this effect is occasionally quite remarkable. I well remember one case of extreme cardiac pain and dyspnoea in a patient almost moribund from cardiac disease, and who did die only a few days subsequently, yet in her the immediate effect of chloroform inhalation was to restore the pulse to her wrist, to enable her to breathe more freely, and in few seconds, instead of being black in the face, pulseless, and gasping partly from pain, and partly from extreme dyspnoea, she became quiet, natural in appearance, and in a short time was able to lie down and rest. But, you may say, in angina the heart is almost universally flabby and fatty; is chloroform not dangerous when we have a fatty heart? The next case which I shall relate will be the best reply to this question. First, let me say that I doubt the possibility of diagnosing a fatty heart. We may suspect its existence, because the physical signs seem to warrant the supposition, while the conditions present are apparently favourable to its development. Thus there may have been a long-persistent spanæmic condition of the blood, or there may be a state of general (pernicious) anæmia, or there may be reasons for suspecting a purely cardiac anæmia from local causes, such as an atherosed and obstructed state of the coronary arteries, or an overgrown hypertrophy of the cardiac muscle which has got beyond the feeding powers of these vessels. For fatty degeneration of the cardiac muscle is the result of mal-nutrition, and seems never to be found apart from one or other of these conditions. But little acquaintance with pathology is, however, requisite to teach us that these conditions are not all of them easily and certainly recognisable, and that even when present fatty degeneration is not an invariable concomitant of any of them. Though, therefore, our suspicions may occasionally be right, they may more often be wrong. The signs of cardiac debility upon which we base our suspicions are much more commonly due to dilatation than to fatty degeneration, in spite of the possible co-existence of an arcus senilis. Besides, there are



many cases of actual fatty degeneration in which there have been no faintings, cardiac asthma, feebleness of the pulse or of the cardiac impulse, no yellowness or pastiness of the complexion, and no arcus senilis—in fact, all the symptoms and signs connected with the heart have either been those of perfect health, or at all events they have not been such as are generally supposed to indicate fatty heart, yet the heart has been markedly fatty. I may refer to the case of Bridget Henry, who died from chloroform in the Cincinnati Hospital, U.S., 13th October, 1870, as a well-known example of the conjunction of a normal impulse with a fatty heart; but indeed of this we could scarcely have a more striking instance than the case of Mrs. Tait, which I will presently relate to you. No doubt the rapid and powerful action of chloroform renders it a very dangerous agent in incautious hands, and some diseased states of the heart, of which an enfeebled and anæmic condition are the chief, render it more sensitive to the action of chloroform, and more liable to be fatally overpowered by an overdose; but I know of no diseased condition which should deter us from its cautious employment when that is otherwise indicated, as I hold it imperatively to be in certain cases of angina pectoris for what we desire to do in them can only be done by means of chloroform. I do not say *tuto, cito, et jucunde*, because the superlatives of these adverbs are more applicable than their simple positives. In a disease possessing such a pathological history as angina pectoris, the one great object is to free the cardiac nerves from the depressing influence of pain, which gives rise to that subparalysis in which the danger lies. This we can only do by narcotizing the nerve centres through which this action takes place, and so setting them free from all those influences which tend to depress the heart's action. The immediate result is a sensation of relief from pain, greater force and freedom of the heart's action, and a fuller pulse.

Sulphuric ether has long been used with a similar intent; it is an admirable narcotic, and the chief objection to its use is that it is not rapid enough, taking always some minutes to bring the patient fully under its influence. Chloroform acts more quickly, even more effectually, and is perfectly safe. It is not always necessary for the medical man to administer it, though in some cases it is so. All that we require is to insure that the patient shall only have a moderate dose, and this we manage by giving him a chloroform smelling bottle, the fluid being poured over a piece of sponge, so that it cannot spill; this smelling-bottle he is told to hold to his nose, and to breathe as deeply as possible. In this way relief is obtained in a few seconds, and so soon as the narcotic influence is produced the smelling bottle drops, and with it rolls away all risk of any overdose.

But however satisfactory our treatment of the paroxysm is, the treatment during the intermission is quite as important, and is often attended by even more striking results. From the pathology of this disease already given you will understand that during the intermission I use every endeavour to improve the patient's general health, and especially to tone up his heart. To this end he must be warned to avoid every source of excitement, to take perfect rest in a mild and equable climate, where he ought to be much in the open air, driving or sitting, but not walking. His diet must be so regulated as to consist of the blandest, most nutritious, and unstimulating foods, avoiding everything likely to prove difficult of digestion or give rise to flatulence, and being particularly careful as to stimulants, the action of which is ultimately to weaken the heart, and the more stimulating such drinks are, and the greater the amount partaken, so much more rapidly is this result attained. Of course the whole system must be carefully attended to, and acid tonics, pepsine, mild laxatives, or any other general remedies given that may seem to be required. But as all secondary functions depend for their perfect discharge very much upon the condition of the great central organ, so our best mode of improving the gastric or hepatic functions will always be to improve the heart. To that end we have as yet only two remedies of any importance: these are arsenic and digitalis. Very shortly after Fowler introduced his tasteless ague drop, arsenic was employed experimentally in a great many diseases, angina pectoris amongst the rest, and in several cases it was found to be successful. Since then it has been often used in such cases. Anstie has declared it to be "an invaluable remedy in cardiac neuralgia," as well as "the most important prophylactic tonic" we can employ in these cases, and my own experience is quite to the same effect. Arsenic is indispensable in all forms of weak heart accompanied by pain. It is useful in all such cases, and in many it is quite successful in putting a stop to angina. Several cases have occurred to me in which arsenic alone has removed angina after a few weeks' treatment, not only temporarily, but permanently. The ordinary dose is from three to five minims twice a day after food, but the dose may sometimes be advantageously pushed till slight physiological symptoms appear, and thereafter continued so long as desired in a dose just short of that needful to produce these effects. Its mode of action is somewhat obscure. Besides being a good general tonic, as well as a special tonic to the heart, it seems also to exercise some modifying influence on the nerves which renders them less liable to pain in spite of a continually advancing degeneration. But however it may act, arsenic is a drug well worthy of confidence in the treatment of



angina, and associated with iron and strychnia it forms a combination specially valuable in all cardiac neuroses. One great difficulty in the administration of arsenic lies in its tendency to irritate the bowels of some patients; this may be overcome by the addition of opium, or by the diminution of the dose, for it not infrequently happens that a constitution sensitive to the injurious action of a drug is also sensitive to its curative action. I have frequently found this to be the case with arsenic, and it is always worth remembering. I distinctly remember one gentleman specially sensitive to the action of all drugs, but particularly to that of arsenic, who could not bear it in larger doses than one milligramme of arsenious acid daily (0.015 gr.); two milligrammes gave him discomfort, one was well borne. He was not aware in what the evil effects of the drug consisted, nor did he know what good I expected from its use, yet in about a fortnight he said, "I feel my breathing easier now; my heart is steadier, and I can go upstairs better than for many years." No better results could have been obtained from larger doses, and, indeed, from his sensitiveness, had these been persisted in, the drug would assuredly have had to be entirely given up. From my belief in the connexion between defective nutrition of the heart and cardiac pain you will readily understand that I put considerable faith in the use of digitalis in these cases, in small tonic doses repeated night and morning. Ten minims of the mixture of digitalis, or one granule of Nativelle's digitaline, is an ample dose, and I have seen nothing but good result from the use of this drug. One granule of digitaline night and morning, with arsenic, strychnia, and iron twice a day after food, is a sort of model treatment for such cases; and this treatment, coupled with nourishing, unstimulating food, abundant rest and fresh air in a mild and equable climate, is often attended by the happiest results in those cases susceptible of improvement, which are, in truth, by no means of infrequent occurrence.—*Edinburgh Medical Journal*, March 1881, p. 769.

---

#### 15.—ON THE PATHOLOGY OF ANGINA PECTORIS.

By Dr. VINCENT HARRIS, Casualty Physician and Demonstrator of Physiology at St. Bartholomew's Hospital.

We must remember at the outset that any ideas which may be, or may have been, advanced about angina pectoris are of necessity to a high degree speculative, as, after all, the term is only one applied to a group of symptoms; and of these symptoms the chief is (according to Latham's definition) the subjective one of *pain*. *Pain*, as a symptom, is of variable

significance, in some cases meaning much, in others next to nothing. In this affection we have no exact means of estimating it, and therefore, as to a great extent our ideas as to the causation of the paroxysms must depend upon a correct estimation of the anginal pain, it is not strange that the pathology of the affection still remains doubtful. In true angina pectoris the pain is of the very severest character, and is localised by Dr. Latham to "the chest from the sternum to the spine." It arises suddenly and ceases suddenly, "and is accompanied while it lasts with a feeling of approaching death." The main theories which have been brought forward to explain the phenomena of the seizure are the following: (1.) That the affection is due to a spasm of the heart; (2.) that the prime cause is essentially nervous; (3.) that the paroxysmal pain is due to dilatation of the heart.

1. Dr. Latham takes very great pains, in his account of angina pectoris, to show that Heberden had no doubt that the symptoms were due to *spasm of the heart*, and he quotes no less than eight distinct reasons from Heberden's original article in favour of this view. Of these, the most important are: that the attacks come and go suddenly; that there are long and complete intermissions between them; and that the pulse is unaffected during the very height of the disorder. Dr. Latham apparently took the same view of the causation of anginal paroxysms as Heberden; and nearly all the subsequent writers, while denying the possibility of spasm as a cause, have acknowledged the element of neurosis in the affection. Dr. Walshe suggests that no doubt the vagus and sympathetic filaments distributed to the heart are the nerves implicated. Heberden did not, it appears, examine the bodies of more than one of the hundred cases which he claims to have seen; in this one, "a very skilful anatomist could discover no fault in the heart, in the valves, in the arteries or neighbouring veins, excepting some small rudiments of ossification in the aorta.

It was not until some time after Heberden's first paper was published that the frequent connection of ossified coronary arteries and fatty heart with angina pectoris was demonstrated by Jenner. It is unlikely that a fatty heart can enter into spasm sufficient to cause such extreme lancinating pain as occurs in these paroxysms. It has been shown by Walshe, that to produce an acute attack of pain it would be necessary for the spasm to occur in a strongly hypertrophied heart. Stokes also in the most emphatic way denies the possibility of accounting for angina pectoris in Latham's way. He says:—

"Bearing in mind that the heart may be considered as a hollow muscle, it is difficult to understand how such a general or local spasm could occur as would only impede and not



destroy its function ; for a complete spasmodic closure of any one cavity ought to cause death by breaking the continuity of the circulation. In such a case, too, we might expect to find after death that the heart or a portion of the heart was firmly contracted on itself. Yet, so far as I know, such a condition has not been found in persons who have died in a paroxysm of angina. Little as is known of spasm of the heart, that little is opposed to the idea of angina pectoris being produced by it. I have already noticed the spasmodic contraction of the heart in tetanus, and in such cases the symptoms of angina were not observed."

The opinion that ossification of the coronary arteries is present in most cases of angina pectoris, although supported strongly by Parry and many subsequent physicians, was strongly combated by Lænnec, who, however, seemed to consider any pain in the chest true angina pectoris ; he stated that Parry's view was "far from being correct." Lænnec considered the affection a pure neuralgia, and was supported by Desportes in this notion. It is very interesting to find that this author, however, found in certain autopsies marked dilatation of the heart, "but in none were the coronary arteries ossified." It is, however, a well-established fact that in very many cases ossification of the coronary arteries and its sequence, fatty heart, are found in patients who have died in an anginal paroxysm. It will be seen, therefore, that Heberden's view, that the whole group of symptoms are due to spasm, cannot be altogether received, although we may be ready to admit with Gairdner that certain of his cases might possibly have been due to that cause and nothing more.

2. Touching the belief of Lænnec, mentioned above, that angina pectoris is a *pure neurosis*, I have endeavoured to show that his views are scarcely to be entertained, as under the head of angina pectoris he included such neuralgia as we call pleurodynia, cardialgia, gastralgia, &c. I also showed that pain running down the inside of the left arm is a very frequent symptom of dyspepsia. During the past year, in the many thousand cases of dyspepsia I have seen in the Casualty Department of St. Bartholomew's, I have been able to confirm this statement—about one patient in six or seven suffering from pure dyspepsia either complaining of this symptom, or on inquiry giving it as not uncommon. It is very strange, however, that this opinion of the pure neurotic origin of angina pectoris was held to a certain extent by Hope, one of the most able writers on the subject. He says : "According to my own observation, it may originate in any cause, whether organic or functional, capable of irritating the heart, or of rendering it morbidly susceptible of irritation ; and as structural disease of the organ has this

effect more than any other cause, it is that on which the malady is most frequently dependent." But Hope agrees with Lænnec in stating that the morbid lesion most frequently found in fatal cases is dilatation and not contraction of the heart. The likeness of attacks of angina pectoris to epilepsy is occasionally very marked. The warning is sometimes like the *aura* of *bona fide* epilepsy. The patient of mine whose case I recorded in my last paper told me that he *invariably* had peculiar warnings of an oncoming attack. The sudden pallor of face, too, succeeded by flushing, which is so marked in epilepsy, was well marked in the same patient.

Trousseau was, I believe, the first to point out this. He says that the pain may begin in the arm and subsequently radiate to the throat, attack the præcordial region, and bring on a sense of anxiety. But this author goes even farther, and regards the nervous element as sometimes quite independent of organic lesion, although organic lesion be present. He calls the disorder *epileptic neuralgia*. As regards the term *neuralgia*, however qualified as applied to a case of typical neuralgia, Dr. Gairdner believes it to be "partially admissible, viewing the disease from the side of the pain alone; but it errs both by excess and by defect, inasmuch as, on the one hand, pain of the severe form implied by the term neuralgia is not always the central or exclusive phenomenon, even in cases ending in sudden death; while, on the other hand, a form of cardiac pain, or *pseudo-angina* (as it has been termed), is not infrequent, which has most of the attributes of a neuralgia in the highest possible degree, and which, though eminently paroxysmal, is by no means apt to lead to sudden death, or to any grave consequences whatever." The same author has ably shown that angina pectoris cannot be a *pure* vaso-motor neurosis, as stated by Nothnagel.

In connection with this view of the purely neurotic origin of angina pectoris, we come to the most important observations which have hitherto been made on the condition—viz., those of Dr. Brunton. These researches, which we shall give in some detail, are thought by some physicians to set at rest for ever the inquiry into the pathology of the condition.

Few observations have been made upon the pulse during an anginal attack by any of these writers who have specially interested themselves in the subject. Heberden makes the very astounding statement, as we have seen above, that the pulse was unaffected in his cases. Latham mentions the pulse only casually. Dr. Brunton's observations upon the conditions of the pulse in a case which, he says, "from the absence of a sense of impending death might be reckoned as one of *pseudo-angina*, but in the intensity of the pain and the manner of its



radiation more closely resembled *true angina*—as cardiac lesion was present, it belonged to the class *organic angina*—showed that in that case there was increased blood pressure. He proved that this increase of the blood pressure was due to a spasmodic contraction of some, if not all, of the small systemic, and probably of the pulmonary arterioles, and he concluded that this was probably due to “a derangement of the vaso-motor system, and accompanied by a derangement of the cardiac regulating apparatus, producing quickened instead of slower pulsation.” In a case which I have recorded, I found the pulse, when taken during a paroxysm, amounted to 104 beats per minute; and although I was unable to take a tracing at the time, there is no doubt that the tension was above normal; this patient suffered from aortic valve (ruptured) disease. No doubt many other observations have been made confirming Dr. Brunton’s facts. Having found in *nitrite of amyl* a drug which diminished arterial contraction, Dr. Brunton applied it with success in the above-mentioned case—the arterial tension diminishing and with it the anginal pain. The same investigator showed that other agents which diminished blood pressure, *e.g.*, blood-letting, also diminished the pain; and those which increased the blood-pressure, *e.g.*, digitalis and aconite, also increased the pain. Since these most excellent results were obtained, *nitrite of amyl* has been used over and over again in cases of true and false angina with success. Without going into the apparent anomalies of the first recorded case, as Dr. Gairdner has done, which do not, it seems to me, interfere with the result, one cannot but agree with this writer when he says that “further observations seem to be required before it can be safely assumed that either the vaso-motor derangement, on the one hand, or disorder of the cardiac innervation, on the other, is the primary or essential phenomenon of true angina pectoris.”

Although a very great number of cases yield to the influence of nitrite of amyl, some do not; and it is these cases which suggest that the pathology still wants clearing up. In addition to this, there is a point which might be made much of, as to whether the drug acts solely by dilating the arterioles. Dr. Brunton dismisses somewhat shortly the possibility that the diminished action was due to a lessened power of the heart. The great importance of relieving the increased arterial tension, however, has lately been further shown by Dr. Murrell. He has experimented with nitro-glycerine, which he showed to have much the same action on the pulse as nitrite of amyl; and applying his experiments therapeutically, he finds the paroxysms of angina thereby much relieved.

3. As regards the question as to whether or not the par-

oxysms are due to *dilatation of the heart*, we are able to cite a great many authorities who believed this, and others, such as Lænnec and Hope, who, although they did not connect this condition with the symptoms, nevertheless were bound to note the great frequency of the post-mortem appearance of a dilated and flabby heart in death in a paroxysm of angina.

According to Dr. Parry, angina pectoris is an example of syncope preceded by a notable anxiety or pain in the region of the heart, the result of some lesion which acts in diminishing the energy of the heart. He traced the symptoms to a retardation and accumulation of blood in the cavities of the organ. Parry, who, as before mentioned, was the first to bring into prominence Jenner's view of the connection between the ossified coronary arteries and fatty heart with angina, further pointed out the unlikelihood of the implication primarily of the vagus, as there is no dyspnoea and no marked palpitation. He exposed the fallacy that patients cannot or will not breathe during an attack (which has been reasserted by Eulenberg), but showed, with Heberden, that a deep inspiration gives a momentary relief to the sensation in the chest, no doubt by pushing on the lagging blood-stream.

Stokes sums up the matter by observing that "angina pectoris is but the occurrence, in a defined manner, of some of the symptoms connected with a weakened heart." And Quain has shown that ossification of the coronary arteries causes angina only because it causes fatty degeneration and atrophy of the heart muscle, and puts the organ in a condition in which it is liable to dilate.

Many other authorities might be mentioned who hold the view that *dilatation* of the heart is an essential in true anginal spasm, and it seems probable that this view is correct from the following reasons:—

(1.) That the heart is very often, at all events, in just the condition for dilatation, being atrophied from fatty changes in connection with ossification of the coronary arteries.

(2.) That the rapidity of the pulse during an attack, which may be taken to mean increasing dilatation of the heart, and so weak and rapid action, until a condition ensues which either ends in death, or from, as it were, an extra vital effort, recovery. The increased blood-pressure may not be an essential in the paroxysm, and if it is, it may be due to a *secondary* stimulation of the vaso-motor centres in the medulla or spinal cord, directly or reflexly producing increased arterial tension.

(3.) That the heart after death is almost invariably found in a condition of dilatation.

Supposing the dilatation of the heart to be an essential in



the causation of the anginal seizure, the question arises whether the increased arterial tension is merely accidental or secondary, or whether it is equally or even more important than dilatation in producing the paroxysm. As we have mentioned above, some physicians strongly hold to this latter view. They may or may not be correct, but, in all fairness, we must altogether decline to believe with them further that dilatation of the heart occurs accidentally and has nothing whatever to do with the causation of the affection.

*The pain* in anginal paroxysms is believed by all the writers who regard it as a symptom of heart disease to be due to irritation of the cardiac nerves. These nerves would be especially likely to be involved in cases of ossification of the coronary arteries, as they are in close proximity to the cardiac nerves throughout their whole course; for these nerves not only accompany the arterial trunks, "but pass into the muscular parietes of the heart along with the coronary vessels, and the nervous filaments can be traced as far as the third or even the fourth sub-division of the arteries. Here we lose sight of them even in the hearts of the largest animals" (Bichat). The pain radiates in severe cases through the connection of the cardiac plexus with the spinal nerves to the brachial and cervical plexuses.—*St. Bartholomew's Hospital Reports*, vol. xvi., 1880, p. 127.

---

#### 16.—ON ANÆMIA.

By Dr. SIDNEY COUPLAND, Physician to the Middlesex Hospital.

It is impossible to speak of idiopathic anæmia without reference to Addison, for he it was who seems to have distinctly called attention to a class of cases in which anæmia is the prevailing symptom from first to last—an anæmia not depending upon recognised causes, not associated with wasting of the tissues, but insidious in its onset and slowly downward in its progress, revealing after death no changes but those of fatty degeneration, especially of the heart.

Lebert in 1853 had recorded cases of fatal "puerperal chlorosis" at Zurich—the seat of the subsequent observations of Gusserow and Biermer—and had spoken of these as examples of what he regarded as an "essential anæmia." Then, however, a long silence on the subject occurs in medical literature, broken only by the publication in Guy's Hospital Reports for 1857 of a series of cases by Dr. Wilks, under the head of "Idiopathic Fatty Degeneration," and of a case in the *Lancet* for 1863, by Dr. Habershon in a paper on this subject. The patient in this case was a spare woman aged forty, who had for

many years been subject to attacks of vomiting, which for eight months before her admission had been almost of daily occurrence. She had much gastralgia, pain in the back and limbs, and was very pallid. The attacks of pain were renewed with much severity. She, however, improved, and left the hospital, to return a year later, "blanched, emaciated, and extremely feeble." No gastric disturbance was present now, only an extreme degree of asthenia and anæmia, under which she sank in two months. The necropsy by Dr. Wilks disclosed only intense anæmia of organs, marked fatty degeneration of the heart, and slight passive effusions in the serous sacs. Thus, these observations showed that in the hospital of Addison, at any rate, the existence of the disease was recognised; and Dr. F. Taylor did good service in collecting all the cases observed there up to the year 1878—namely, as many as twenty-three.

I have collected 110 cases, including most of those mentioned by M. Lépine in a review published in 1877. The number might, I believe, well be doubled, before embracing all those cases which have been recorded. Seldom has such a mass of evidence bearing on any one disease been accumulated in so short a time; and yet it is not possible to arrive at a satisfactory solution of the question of its origin. It presents us, however, with the symptomatology of anæmia in its most severe form, and throws light upon the most marked lesion produced by anæmia. Of these 110 cases, 56 were males and 54 females. The ages at which the patients came under notice—often, that is, only a short time before death—varied with the sexes, for among the male cases the majority—viz., 33 or 59 per cent., occurred between the ages of forty and sixty; and among the female series—34 or 63 per cent.—between twenty and forty.

The onset of this severe affection is sometimes quite sudden—in such cases following severe mental shock or some violent emotion; or a profuse hemorrhage, which at the time may threaten life, leaves behind it an anæmia which never disappears, and may become pernicious—i.e., may deepen in intensity in spite of treatment. More commonly this exciting cause is added to a pre-existing and long-standing anæmia, which then takes on a fatal form, or the determining event may occur in some other exhausting discharge. Leaving for the present the consideration of these prodromal influences, I may simply state now that in many cases the onset is gradual and insidious, having perhaps in some cases a foundation in conditions of blood impoverishment, but in others arising quite apart from such conditions. Or the patient may have been always below the standard of health as regards blood; may have suffered more than once from extreme anæmia, and have regained the previous level, to be finally again lowered



beyond restoration. However this may be, the symptoms which usher in the condition can all be attributed to it. There is a growing pallor of the skin and visible mucous membranes: a pallor frequently mingled with a yellowish tint and even with a slight degree of actual jaundice; and the face becomes wax-like in appearance. At the same time there is an increasing disinclination for physical exertion, partly from mere listlessness, partly from the breathlessness and palpitation which any physical effort evokes. The nutrition of the body is often well preserved; there may be, as Addison remarked, even an excessive amount of cutaneous fat. Then, as the blood becomes more impoverished, dropsical effusions may appear in the eyelids and lower limbs; but such œdema is not a constant symptom, and is generally late in its appearance. With the muscular asthenia there is often complaint of pain in the limbs or back; and headaches, vertigo, and tinnitus are frequent. Sleep is sometimes, but not usually, heavy, a lethargic, drowsy state supervening towards the end, which may pass into semi-coma. But insomnia is a more constant symptom. Delirium may occur at the close, and sometimes convulsions. On the side of the digestive system there is generally loss of appetite, it may be with actual intolerance of food, and dyspepsia with nausea and vomiting are common. Indeed, vomiting stands out prominently among the symptoms of the disease, so common, so frequent, and so early in its occurrence as to lend support to the view of Drs. Flint and Fenwick as to the essential dependence of obscure and fatal anæmia upon primary gastric derangement. Although in some cases such vomiting and other symptoms of gastro-intestinal disturbance do precede the appearance of the weakness and pallor, yet it is not always so. Thirst, too, is marked in many cases. Gastralgia and epigastric tenderness are generally associated with the dyspeptic symptoms. Then, as to the intestines, diarrhoea is almost as often met with as vomiting, occurring sometimes early in the disease, sometimes just towards the close, which it determines; and although it is amenable to treatment it may recur again and again with much severity. Constipation is not so common as diarrhoea.

As a rule, in the earlier stages, the breathing is quiet, except on exertion, which induces marked breathlessness; but sometimes, at an advanced stage, attacks of dyspnoea are frequent and painful, and may lead to a fatal result. In the cases I have had the opportunity of reading I have not found this dyspnoea recorded as being of the peculiar ascending and descending rhythm, with a period of apnoea, known as Cheyne Stokes respiration. The association of that type of respiration with fatty degeneration of the heart was noticed by its dis-

coverers, and though it occurs under other conditions also—e.g., uræmia, cerebral hemorrhage, embolism, &c.—yet its association with fatty heart is still accepted. As such degeneration is the most constant morbid lesion of anæmia, it is at least singular (if it be a fact) that this type of dyspnœa does not occur. As a rule, unless there be old disease in the lungs, there are no abnormal physical signs, except towards the end of life, when these organs become engorged, and serous effusions may take place in the pleura.

Attacks of syncope are liable to occur, but do not seem to be so frequent as might be imagined. The action of the heart is generally regular and quick, often very feeble. The impulse is often widely visible, undulating, and thrilling; the area of præcordial dulness laterally increased, signs attributed by some to retraction of the lung, by others to dilatation of the heart itself. The so-called “hæmic” bruits are commonly, but not invariably, met with; a systolic blowing murmur at the apex and xiphoid cartilage, a bruit of coarser character simulating pericarditic friction at the base. The large arteries of the neck often visibly pulsate, and are the seat of loud murmurs. The jugular hum is seldom absent, and pulsation of the jugular vein is often observed. The pulse is soft and compressible, quick, jerking, and empty.

In all these symptoms there is nothing peculiar or special. They simply denote the presence of an anæmia of pronounced degree, but there is one group of symptoms which occurs with such frequency in those severe forms as to be almost regarded as distinctive of them. I refer to the supervention of hemorrhages, and here it seems to me important to make some reservations. In several cases hemorrhages of one kind or another—e.g., epistaxis, menorrhagia, take place in the prodromal period, and antedate the development of the anæmia, which they have much share in producing. Such hemorrhages must be distinguished from others, often quite as profuse, which follow upon the appearance of the anæmia, and when appearing they add greatly to the intensity of the disease. In a case the particulars of which I shall presently narrate the patient had been anæmic, and progressively so, for years; then supervened profuse menstruation, and finally a severe uterine hemorrhage which nothing would check till it carried her off. Epistaxis, too, is common as a secondary result. Sometimes cerebral hemorrhage may ensue and carry off the patient, but this is not common. More frequently towards the close of life petechial and purpuric eruptions occur, and beneath serous membranes, and the dura mater ecchymoses are common, as well as in the substance of mucous membranes. In one very curious case, both in its rapid development, intense character, and as rapid



recovery, recently recorded by Lachmann from Riegel's Clinic at Giessen there developed during the progress of the anæmia a considerable tumour in the iliac region, with œdema of the lower limb on that side; from its physical characters and manner of disappearance it was conjectured (and with probable truth) that this swelling was due to a hemorrhagic effusion beneath the peritoneum. The patient was a young man of nineteen, and the anæmia had developed rapidly with no other exciting cause than heavy walking through snow. That patient, like the great majority of those in whom the anæmia is profound, presented retinal hemorrhages. These hemorrhages and the other retinal changes, œdema of the disc, and neuro-retinitis have been described and figured by Drs. S. Mackenzie and Gowers, the latter of whom says:—"The extravasations are often numerous, and more or less striated or flame-shaped from their situation in the layer of nerve-fibres. They are usually most abundant around the optic nerve-entrance. They are frequently associated with white spots and areas, due in part to leucocyte-like cells, in part to degeneration in the disturbed retinal tissues. Occasionally a pale spot may occupy the centre of a small hemorrhage." Quinke in his 31 recorded cases met with retinal hemorrhages in all but 7—and notes the rapidity with which they disappear. We cannot, I think, regard them as invariably present; although their existence is a very valuable indication of the advanced stage of the disease. Moreover, as they are not commonly met with in other forms of anæmia, their presence has a certain diagnostic as well as prognostic value; but on the latter point Quinke gives cases which have recovered. Of the 110 cases (which includes Quinke's) there are only 39 in which the ophthalmoscopic examination is recorded, and in 30 the hemorrhages were found, but only 17 were fatal cases, 1 left unrelieved, and no fewer than 11 were regarded as recovered. Of the 9 cases in which these hemorrhages were *absent*, 6 were known to end fatally. I should not like to lay much stress upon such meagre statistics; especially as it is possible that the traces of previous hemorrhage might have escaped the observers; but so far as they go, they point to this—that retinal hemorrhages do not imply a fatal termination, and that their absence does not necessitate a favourable prognosis.

There is usually no enlargement, or to only a slight degree, of either liver or spleen or lymphatic glands, and in only a very few cases has any special tenderness been noted over the bones.

Albuminuria, slight and transient, has been noted; but as a rule the urine is free from this abnormal constituent, of low specific gravity, mostly pale, sometimes high coloured, and deficient in urea and uric acid; but the latter constituent is not diminished in proportion.

There can be no doubt that pernicious anæmia is not invariably fatal. Cases of recovery have been recorded by Quincke and others, where all the symptoms have been marked. Dr. Finny gives a striking case, and of the series to which I have so frequently referred no fewer than twenty are regarded by their observers to have recovered. Some of these did recover perhaps permanently, but of this it is not possible to speak with certainty, the last recorded note often referring to them as being in perfect health; and these were cases which clinically were indistinguishable from those that ran a lethal course; some of them undoubtedly were rescued by prompt transfusion, and others got well under medicinal treatment; but their occurrence is encouraging, the natural tendency of the disease being undoubtedly towards death. Four cases passed away unrelieved; and 4, after an apparent recovery lasting a few weeks or months would relapse into the previous state, to again be temporarily restored to comparative health—once more to relapse without possibility of recovering. The greater number, however, die (86 out of 110) sooner or later (4 of these after temporary recovery and relapse), the mode of death being a simple asthenia and exhaustion, or passage into a comatose condition, or in syncope, or by dyspnoea, or convulsions. To briefly paraphrase Müller's vivid description of the manner in which death approaches: the distress attains a painful intensity, sleep is hindered by the constant beating in the head, the hum and roar in the ears, whilst the faculties became dim and unspeakably dulled. Vertigo and headache grow so severe that even sunlight causes pain. The prostration and weakness are so great that spontaneous effort is annulled, and the slightest movement, even the weight of the bedclothes, is irksome, and the patient groans and sighs in his distress. Now and then, towards the close, the hunger for air grows excessive, complaints are made of the painfulness with which every breath is taken, and relief is begged from this tormenting need. Some become so feeble, and sink into so deep a lethargy, as to cease to take interest in anything, or they lie impassive, breathing deeply and heavily, pale as a waxen figure, motionless as a corpse. Others toss restlessly from side to side, and in their delirium make vain efforts to escape, and then die suddenly from exhaustion. What is this but the picture of death from loss of blood—a loss, not from hemorrhage, but from impoverishment of the blood in its chief elements?

The post-mortem appearances show extreme pallor of the surface and viscera. There is often a considerable amount of subcutaneous fat, and frequently slight cedema of the lower limbs. Dropsical effusions, never to large amount, occur in the serous sacs. The blood is fluid, thin, and watery,



and scanty, pale clots are mingled with the fluid blood in the chambers of the heart. Hemorrhages are met with in the form of subcutaneous ecchymoses, and similar extravasations beneath the pleura, pericardium, intestinal mucous membrane, and in the pia mater. Sometimes blood effusions of large amount occur in the latter situation. But the brain is pale, bloodless, and "wet" from œdema. The lungs are generally œdematous, and, owing to the fluidity of the blood, appeared engorged in their dependent parts, contrasting with the marked anæmia of their other portions. Almost without exception the heart is in a state of fatty degeneration; its walls are pale, flaccid, and friable; the interior of the ventricles, particularly of the left ventricle, show irregular whitish striæ running transversely across the muscular bundles, and especially the papillary muscles, an appearance to which Dr. Quain gave the name of "tabby-cat" striation. Microscopically the muscular fibres are pale, and destitute of striation, granular, or loaded with fatty molecules and cell globules of various sizes. Opaque patches of fatty degeneration occur on the mitral valve and stud the lining membrane of the aorta. Fatty degeneration of the intima of the smaller arteries, and even of capillary walls (especially in the retina) are observed, and serve to explain the liability to their rupture and hemorrhage. Sometimes, but not invariably, there is fatty degeneration of the liver and kidneys. The spleen, lymphatic glands, and supra-renal capsules do not show any changes from the normal (except sometimes slight enlargement of the spleen), but in some cases the bone-marrow is found to be of a red colour and to show microscopical evidence of marked hyperplasia.—*Lancet*, April 2, 1881, p. 531.

#### 17.—THE BLOOD-CELLS IN ANÆMIA.

By W. G. TACEY, L.R.C.P., Bradford, Yorkshire.

The recent published observations on the appearances of the blood-cells in anæmia by Dr. Bastian, Dr. Cavafy, and others have afforded to many a desire for further information and investigation on this very interesting subject. With this view I venture to offer a few observations upon two cases of anæmia kindly sent to me for examination; both were well marked instances of this condition, and of long duration. The blood in each case was microscopically examined under  $\frac{1}{8}$  objective immediately after removal from the finger of the patient, and was again examined eight hours afterwards under one of Zeis's high-power objectives. The white corpuscles were very abundant, more than the average size, and exhibited very feeble amœboid alteration in shape; but, after careful watching I was at length able to distinguish decided pseudopodia in one

or two cells, and more than once the prolongations reminded me of the filamentous protrusions of the *Amœba princeps* or the *Actinophrys sol*, as figured in Carpenter's "Microscope." If, according to Dr. L. Beale, these are vital movements, and the corpuscule possesses no cell-wall, vibratile filaments can be demonstrated by the aid of modified heat; or again, if, according to Cohnheim and others, the corpuscules are able to pass through the capillary walls (diapedesis), it does not appear so very improbable that these pseudopodia-like changes in the white blood-cells should occur.

With reference to the red corpuscles, considerable variations in the contour of these cells were evident enough; the general tendency seemed to be towards irregular curvation, and corresponded with the description communicated some few months ago by Dr. Finny and Dr. Churton.

In addition to this irregularity, I noted a slow oscillatory movement of these corpuscles, to all appearance identical with the molecular agitation usually seen in granular solids. If my observation is correct, and this motility is shown to exist, is the motion vital or physical? The red blood-cell is said to have no granular contents; therefore the movement cannot be included in the category of the so-called "Brownian motion."

On this occasion I also examined blood from a case of Bright's disease of some duration, and observed a similar want of uniformity in the outline of the red corpuscles; crenation was conspicuous by its absence. In this case the slow movement was evident, and could be seen several hours after removal from the patient. Here, again, the leucocytes were in abnormal quantity, but not so distinctive in size and number as compared with the above-mentioned cases of anæmia.—*Lancet*, April 2, 1881, p. 539.

---

#### DISEASES OF THE ORGANS OF RESPIRATION.

---

### 18.—THE INFECTION OF PHTHISIS AND ITS BEARINGS ON TREATMENT.

By Dr. G. HUNTER MACKENZIE, Edinburgh.

That a resemblance exists between the tubercular process and septic poisoning seems to be beyond doubt. This is seen in the clinical study of the thermometry of the two classes of disease. Various authors have recently directed attention to this fact, notably Professor Charcot of Paris and Dr. Waters of Liverpool. In his most recent contribution to the literature of the subject, the former remarks, "the thermic curves are not those of inflammatory action, but of putrid infection," and he goes on to show that "in the pyrexial form of phthisis, the evening



exacerbation (of temperature) is due not to a pneumonic process, but to resorption of the softened material." Common phthisis is regarded by Dr. Clifford Allbutt as "cases of pure ulcer, these ulcers constantly being the seats of foul secretions of some kind or other, and producing chronic pyæmia." He also remarks on the peculiar susceptibility in some persons to septic influences in the lung.

Recent research seems to show that this septic poison is eminently contagious. As the result of experimental inquiries, Klebs believes that tuberculosis is an infectious disease of parasitic origin, induced by certain micro-organisms which invade the body and multiply in it, and that the expectation might be entertained of curing it by the employment of means which are calculated to annihilate these organisms. Schüller of Griefswald has proved that animals in which artificial tuberculosis has been induced by injection die, without exception, with the usual phthisical symptoms—viz., emaciation, loss of heat, and afterwards general miliary tuberculosis. Amongst others who have given the weight of their authority to the belief that tuberculosis is contagious are Mr. Simon and Dr. Greenfield; such contagion being frequently spread by the milk of high-class cows, which are very subject to the disease.

The interesting paper by Dr. Thompson seems to show beyond doubt that pulmonary consumption may be propagated by direct infection from man to man. Dr. Murrell had previously directed attention to this fact, and in the *Lancet* of May 22 of the current year he records a clear case where a wife was infected by her husband. It is important to note that whilst the lower animals may communicate the contagion to man, man may in return infect the lower animals. In proof of this is the case recorded by Dr. Cullimore (*British Medical Journal*, May 22, 1880), where a strong, healthy dog, lapped up the sputum of a tuberculous man, and died in a short time of pulmonary phthisis.

With these considerations in view, the practical part of the question—namely, treatment—may be approached. Now the point arises whether all phthisical patients should be treated on the same broad basis, or whether there are varieties of the disease sufficiently distinct to render a method of treatment which might suit one form unavailing or prejudicial in another. The unity of the virus in the different pathological conditions grouped under the name of phthisis appears to have been fairly ascertained by the recent experimental researches of Cohnheim, who claims to have established that the poison of true tuberculosis is identical, not only with

that met with in the other forms of phthisis, but also with that present in scrofulous glands. This, however, is scarcely borne out by the state of affairs at Quito, where, according to Domee, phthisis is rare, and yet various forms of scrofulous disease are so common as to impress a peculiar character on our surgery. But be this as it may, it seems to be generally accepted, both as a result of clinical observation and experimental pathology, that in phthisis pulmonalis we have to deal with a disease of a septic parasitic origin, presenting a variety of pathological features, and under certain conditions readily infectious. We have here a clear indication for the employment of antiseptics.

The beneficial results following the use of antiseptics in phthisis have been long noted. At the Social Science Congress held lately in this city, a discussion occurred on the cause of the increasing prevalence of consumption amongst the native Highlanders. The president of the section (Dr. Beddoe) was inclined to attribute it to the changes which had of late years taken place in the domestic arrangements of their homes, and notably to the substitution of modern fireplaces and fuel for the old peat fire in the centre of the apartment. Twenty years ago attention was directed to this same subject by Dr. Morgan (now physician to the Manchester Royal Infirmary), and in a very interesting communication to the British and Foreign Medico-Chirurgical Review he shows that the smoke of peat, by virtue of the antiseptic substances it contained, had a marked beneficial action on the lungs of those breathing it. These and other facts enable us to answer the question, Should the employment of the antiseptic be local or constitutional? My therapeutical experience leads me to believe that, as shown by Matthews Duncan to be the case in some examples of puerperal fever, it is more frequently a condition of sapræmia than pyæmia which obtains in phthisis—that the toxæmia is rather attributable to the chemical factors which putrefaction engenders than to the presence of micrococci in the tissues and blood. I therefore think that it is only by the local application of the antiseptic that good results can be obtained.

In applying this principle to practice, I have for the last year and a half been in the habit of using what might be called a naso-oral antiseptic respirator—*i.e.* a respirator which covers both the mouth and nose, and contains a volatile antiseptic, which is drawn into the lungs with each inspiration. This respirator is provided with inspiratory and expiratory valves, is not liable to get out of order, and is easily worn. I have treated several cases of phthisis with it with considerable



success, and now subjoin brief notes of two cases. I select these as having been seen by other medical men than myself, and the first also as showing that a child may respire an atmosphere of pure creasote not only with impunity but with positive benefit.

*Case 1.*—A. G——, female, aged seven, consulted me on October 20, 1879. She complained of cough, sputum occasionally tinged with blood, emaciation, and nocturnal sweatings. Had been getting worse for months. On physical examination there was rough, jerky respiration, with prolonged expiration at the left apex anteriorly; pulse small and soft, 106 (a few days subsequently it was 140) per minute. As she seemed to become worse under the ordinary treatment, on December 4th she commenced to wear an antiseptic respirator charged with pure creasote. On December 15 the results noted are—(1) increased appetite, (2) quieter nights, (3) less cough and vomiting, (4) slight fall in the pulse-rate, (5) still hot and feverish in the evenings. On January 5 (still continuing to wear the respirator) she had apparently quite recovered. On January 12 she was shown at the clinique of Professor Grainger Stewart in the Royal Infirmary; she then seemed all right. On January 17 she ceased to wear the respirator, and returned to school. On October 4 I met the mother of the patient in the street, when she informed me that her daughter had continued well ever since.

*Case 2.*—This case occurred in the practice of the late Dr. Forbes, of West Newington-terrace, in this city, and but for his untimely death would have been recorded by himself. From Dr. Forbes's letter, now before me, regarding the case, I find that the patient, a male, aged twenty-five, sent for him in January last, complaining of general debility, shortness of breath, and loss of weight. On physical examination the right pulmonary apex was found to be affected (consolidated). The ordinary routine treatment was tried for some time, but without the slightest benefit. In February, on the recommendation of Professor Grainger Stewart, who saw the case in consultation, the use of the naso-oral respirator was commenced, charged with equal quantities of pure creasote and carbolic acid. Rapid improvement soon ensued, and, instead of being confined to bed, the patient was shortly able to leave for the Channel Islands. On July 6, through the courtesy of Dr. Forbes, I was allowed to interview this patient. He was a very intelligent young man, and stated that, before commencing the use of the respirator, he was so ill that at the consultation the doctors told him "there was not much hope." He still (November) continues well.

I have experienced equally good results in similar cases in

my own practice ; these I purpose submitting to the profession on a future occasion. I have already considerably exceeded my original limits, and shall conclude by expressing my opinion that in the correct application of antiseptics to the treatment of phthisis we are on the proper track towards the solution of a problem which has for long been an *opprobrium medicinae*.

I may mention that the respirators, as used by me, are made by Mr. Gardner, South Bridge, Edinburgh.—*Lancet*, Nov. 27, 1880, p. 871.

#### 19.—ON A CASE OF PHTHISIS AB HÆMOPTOE.

By Dr. W. T. GAIRDNER, Professor of Clinical Medicine in the University of Glasgow.

Any one who has followed the course of recent researches on tubercular disease, especially those which have got importance and celebrity in Germany from the great name of Virchow, must be aware that many new questions have been raised ; and among these are the relations of tubercle to inflammatory processes, which, according to Laennec's views, are secondary to the tubercle, but which some of the Germans are teaching us are primary. That is a very large question, and it is not necessary that it should be entered on at present ; but every one who is familiar with the able lectures of Niemeyer on phthisis is aware that he presents this subject in a light to which most of us find it rather difficult to accommodate all our clinical and practical opinions ; and in particular, he utterly denies the tubercular nature of a great many of the processes concerned in phthisis pulmonalis ; further, he presents the relation of the inflammatory processes in the lung to tubercle in quite an inverted manner to that which Laennec's views involved, and makes it a particular point of his doctrine to support the suggestion implied in the phrase—"Phthisis ab Hæmoptoe" (which was also a very ancient view of the origin of consumption), that the bleeding is the first step and the consumption the second. He tries to bring it into accord with Virchow's views, and thinks that the blood, being poured out into the bronchial tubes, is sucked back into the alveoli of the lungs, or is extravasated directly into the alveoli, and being there caseates, and in this process of caseation gives rise to products which infect the system, and thus originate miliary tuberculosis, which, according to him, is the only true tuberculosis. Now, the pathology of Laennec was precisely the opposite—that the tubercles were there, or at any rate the tubercular tendency was there, and that the blood-vessels of the lung bled as a result of it ; thus the hæmoptysis was the



result of the tubercular tendency, and therefore took place at various stages of the progress of the disease, and thus the bleeding was usually, if not always, a secondary change, arising from previous tissue changes in the lung or its blood-vessels.

The seeming discordance of these two views gives to every case of apparent "Phthisis ab Hæmoptoe" great interest at present; and though it cannot be presumed that any one case will settle the question, yet the case now before the Society may be considered as presenting some features which were worthy of attention.

The peculiarity of this case is that in a young man two separate considerable hemorrhages occurred at intervals, with so little disturbance to the system that, but for the alarming character of the hemorrhages themselves, he would not have been in the Hospital, and would not have taken any medical measures whatever. Of course, only a brief account of the case, which is reported very fully in the Journals of the ward, can be here given.

Patient was a boy of 17, a rivet heater; admitted into the Western Infirmary on 24th Sept., 1877, with no characteristic physiognomy, unless it was a tendency to a florid, or slightly livid complexion, which rather gave one the impression of heart disease than of tubercle, and, in fact, a doubt was entertained as to whether the hæmoptysis was due to the heart or lungs. There had been a hæmoptysis immediately before admission, of uncertain but of considerable amount, and it was found that there had been a preceding hæmoptysis some time before of still greater amount, but which had only temporarily interrupted him in his occupation. The symptoms were almost *nil* after the blood had come up; it could even be said that, but for the distinct instructions of the physician, he would not have been in bed. He had no sense of pain or difficulty in breathing; he had absolutely nothing to complain of. But while there was this entire absence of palpable symptoms, there was an extensively diffused crepitant râle on the left side of the chest, chiefly over the lower part, which left no doubt that the hæmoptysis was connected with it. There was also a reduplication of the second sound of the heart over the pulmonary artery, which led either to the inference that there was cardiac disease, or pulmonary disease leading to obstruction of the circulation through the lungs. These signs were singularly persistent; the crepitant râle, loud and distinct over the lower lobe, continued for weeks, during all which time the lad hardly suffered from a single symptom that was worthy of the name. His temperatures also, probably the most delicate physical test of a state in any way allied either

to inflammation or tuberculosis, showed singularly little disturbance. They were at first taken only twice a day, and from 25th September to 1st November they rose on one occasion to 101° F., and on one other to 100° F., but with these two exceptions they were almost absolutely normal throughout those three weeks following the hemorrhage. At a later period they began to show slight oscillation, and on 3rd December a sudden and exceptional rise took place to 102·2° F., and for weeks after that the temperatures were little if at all in excess of the normal, up to the beginning of January; so that for three months of the most careful recording, there were only the most rare exceptions to the general statement as to the temperature being mostly within normal limits. The pulse and respiration were also almost perfectly quiescent. During this time, after the first alarm of the bleeding had been got over, the lad was out of bed, going about the ward, assisting in the work, and making himself useful, and only kept in hospital because it was thought desirable to watch him; the examination of his chest was thus rather thrown into the background. After he had been six weeks in the house a new examination was made. Here it should be stated that on his first admission he was carefully examined every day, and the upper lobe of the lung was adjudged to be perfectly sound, the respiratory murmur over it being even puerile, while the lower lobe presented the crepitus above mentioned, and also dulness on percussion. I must say, therefore, that considerable surprise was felt on coming back to the physical examination some weeks afterwards, on discovering the metallic sounds characteristic of a considerable excavation over the upper lobe, where immediately after the hæmoptysis the respiratory murmur had been abundant and the percussion good. There was no reasonable doubt of these facts; so that it was perfectly clear to me, that while this lad was walking about the ward with pulse, temperature, and respiration normal, with scarcely any appreciable expectoration, and no pain, a cavity had developed, of size sufficient to produce the most marked physical signs, in the upper part of the lung. Briefly, the rest of the case may be said to be as follows: from this time, by exceedingly slow stages, the patient still making no complaint, hardly a patient at all, going home and coming back again, for he was three times in the Infirmary, the disease gravitated into a case of very chronic ordinary phthisis, and came to be undistinguishable in character from an average case of very slowly developed tuberculosis; and ultimately the lad died.

At the *post-mortem* examination the left lung was found firmly adherent, and an enormous cavity was found in the upper lobe, into which several large bronchial tubes opened;



the tissue was condensed throughout in the lower lobe with smaller cavities. The right lung was free from adhesions, and there was no considerable condensation, much less any cavities, but it was dotted over with frequent dark nodules, which the microscope showed to be undoubted miliary tubercles. Miliary tubercles were also found, though not very abundantly, in the liver and spleen. It was certainly a case where one would have been strongly inclined to doubt the tubercular nature of the disease, as observed without the microscope, for it had a good many of the characters of cirrhosis of the lung, but from the microscopic sections from the right lung, some of which are shown by Dr. Coats to-night, there was no doubt as to its tubercular nature. This lung was very adherent. In the right lung there was an entire absence of adhesions.

The tubercular character of the disease ultimately is thus clearly established, and the question is with what pathology of tubercle does this case best agree? It seems to be one of the cases that comes nearest to the general doctrine of Virchow, the doctrine of a secondary tuberculosis, of a "*phthisis ab hæmoptoe*," as expounded by Niemeyer; but if it is to be accepted as such, it differs from Niemeyer's description in details, especially as regards the inflammatory changes and symptoms usually following a hæmoptysis. He says, the blood being in the parenchyma of the lungs or in the alveoli leads first to an inflammation; and that he has often witnessed a development of high fever and pain, with symptoms of inflammation after such a bleeding as we had in this case. In the patient whose lung is now before us, it would perhaps be too much to say that the bleeding took place without any inflammation; but this at least may be safely said, that whether the tubercular tendency preceded or followed the hæmoptysis, it seems to have come on without anything of the characters of the inflammation as gauged by the symptoms.

It may here be suggested that cases of hæmoptysis like this one are not the only cases in which it is known that blood is poured out into the lung; and it always appeared to me a difficult point to meet, on the modern theory of hæmoptysis giving rise to tubercle, that cases are very numerous where hæmoptysis and also hemorrhagic condensations take place, but where it is very rare for tubercles to follow. Hæmoptysis as the result of mitral disease, "*apoplexy of the lung*" as Laennec called it, is the very type of a case where one would expect, on this theory, the blood stagnating in the air cells of the lung to caseate, and thus give rise to secondary or miliary tubercles; and yet it is very rare to find mitral disease associated with tubercular disease. Then, again, hemorrhage often occurs into other organs or parts in which tubercle never follows, as in

bruises, in scurvy, in embolism, even pulmonary embolisms, &c., or in hemorrhage into the brain, where the rupture of a blood-vessel and the formation and organisation of a blood-clot is often survived for many years, and where caseation hardly ever does result as a consequence, and tubercle is still more rare. Certainly neither inflammation in the ordinary sense of the word, *e.g.*, abscess, nor caseation, nor tubercular meningitis, nor general miliary tuberculosis, can be said to be at all a common result of an old apoplectic clot becoming encysted; and yet, on the theory that extravasated blood *per se* is apt to caseate and give rise to tubercular disease, one would expect tubercle in one form or another to be among the well known and familiar pathological incidents of cases where an apoplectic clot has remained for years, has undergone gradual fatty degeneration, and has by slow degrees become to a great extent removed. So also it is not rare, though not, perhaps so common, as in the case of the brain, to find hemorrhagic condensation in the lungs, from cardiac disease or embolism, undergoing a great variety of chronic changes, more or less allied to inflammation, and even to ulceration and gangrene; but caseation in such cases is almost unknown, and tubercles, whether primary or secondary, are extremely rare, more rare perhaps than in any other kind of death from chronic disease in any organ.—*Glasgow Medical Journal*, April 1881, p. 249.

---

## 20.—ON THE PROGNOSIS AND TREATMENT OF CHRONIC DISEASES OF THE CHEST IN RELATION TO MODERN PATHOLOGY.

By Dr. JAMES E. POLLOCK, Senior Physician to the Hospital for Consumption and Diseases of the Chest, Brompton.

I shall first state generally and briefly the leading change which has taken place in our time in the pathology of chronic lung-disease. We may say that, up to the time of Bayle, and Louis, and Laennec (that is, within the present century), there was no definite theory of the morbid condition of lung constituting consumption. It is, perhaps, to Laennec, more than to any other, that we owe definite ideas regarding what he called tubercle. His well-known theory was that, owing to a depraved state of constitution, an exudation took place into the structure of the lung, which, in time, underwent certain changes of caseation and softening, ending in ulcerative destruction of all the lung-structures. In studying Laennec, I fail to find—plainly for want of microscopic knowledge of the minute structures of the lung—any information as to the part primarily invaded. We are not told whether the so-called exudation was within or without the air-vesicles, or in the



interlobular or perivascular structures. The miliary tubercle of Bayle, which was supposed subsequently to pass into a yellow caseation, and finally to undergo degenerative changes, is open to the same remark; and I am not here interested to say whether this theory is susceptible of support.

It remained for Addison in this country, and for Niemeyer more recently in Germany, to express their conviction, that the disease which is called consumption is mainly due to inflammatory changes; and that the resulting exudating-product in the lung undergoes degenerative alterations, which ulcerate all its structures. Virchow showed that the yellow caseation so resulting may be the product of the fatty degeneration of various morbid matters, as pus and cancer, and that much of what is called tubercle is of inflammatory origin, chiefly epithelial. The adoption of these views of inflammation in this country has given the stamp to the modern doctrines regarding lung-disease. Following the German view, inflammations of the lung are now divided into two leading forms, croupous and catarrhal; and it requires a very able practical physician to separate clinically the latter form from consumption. We must ask whether phthisis is an inflammation? and is the lung-exudation, or that morbid material which is found in the lung in chronic ulcerative diseases, identical with the product of acute inflammation? Are the structures of the lung so invaded or infiltrated (if I may use the term) identical in both cases? It is plain that I mean entire identity, not a mere histological sameness, the same cells or the same nuclei, but a real conformity of the structure invaded and altered, and of subsequent history; for these products of which we are speaking are short-lived, and undergo certain chemical changes dependent on their diminished vitality. They lose their blood-supply, become cheesy, disintegrate, undergo fatty degeneration, and may be absorbed; or they may become changed into fibrous structures of low vitality but contractile, which alter the whole structure of the lung. Again, Is the anatomical portion of the lung primarily affected the same in the acute inflammatory attack and in the so-called tubercular phthisis?

In the answers to these two questions, viz., Is the product in the lung identical histologically and chemically in the two affections, and are the structures first invaded actually the same? I hope to show that the key will be found to many important practical problems in the history of chronic lung-diseases, and also in their treatment; for not only is the nature of the affection involved in this inquiry, but also the progress and ultimate event of these diseases implied.

I proceed, therefore, briefly to consider the phenomena of acute inflammatory disease of the lung, and compare them with

those of chronic forms. The divisions of pneumonia are now-a-days into the croupous and catarrhal. In the first, which is the old sthenic acute form, we have high febrile symptoms, ushered in by chills, a temperature rapidly rising to 105-108, and all the signs of intense consolidation of the lung; the vesicular structures of the organ being obliterated, and only the larger bronchi remaining pervious. The result, as is well known, is a fibrinous exudation into the alveolar cells, which, after an interval of eight to twenty days, undergoes rapid degenerative fatty changes, and is absorbed, leaving the walls of the air-cells unimpaired and elastic as before. Recovery is perfect, the breathing being mechanically and physiologically performed as in health. Neither is the interlobular structure altered, and there is no permanent thickening around the ultimate vessels or bronchi in the interalveolar cellular tissue.

When opportunity is given of examining such products in acute pneumonia, they are found to consist mainly of an exudation of fibrin with white and red corpuscles, and the bronchioles are filled with coagula, even up to those of fifth magnitude. As regards their site, they are strictly intra-alveolar, that is, they are confined to the air-cells, and the walls are not engaged, unless indeed by pressure from within. We have all no doubt admired during life the perfect recovery which takes place after pneumonia, and how speedily vesicular breath-sounds succeed to the blocked dumb condition of lung, which prevailed in the first stage. This is due to the fact that the walls of the air-cells have never been impaired nor disintegrated in the degenerative process of clearing up the cells.

But sometimes these pneumonias, however acute at first, do not clear up and resolve. At the end of about the second month, the patient, who has expected convalescence, but whose leading symptoms have subsided, becomes again somewhat feverish. His temperature rises, say, to 103° in the evening; and he has slight sweatings, and does not recover flesh, and begins to cough. The physical signs tell that the lung, although less solid, has not recovered sonoriety; and air does not penetrate the remotest vesicles; or there may be patches of dulness and bronchial breath-sounds, showing consolidations, partial, and somewhat insulated by tracts of lung more pervious. If opportunity be given of examining the morbid portion, you will find not only the air-cells blocked, but the alveolar walls themselves thickened, and invaded by a small cell-formation, with some fibrillated structure; so that their elasticity is lost; while the interalveolar structures are thickened, and the terminal vessels, pulmonary capillaries, and minutest bronchioles are beginning to be strangled by a new growth. These changes precede



those of softening, in which all these structures are broken down and ulcerated. The case now looks very like phthisis.

I take now the description of catarrhal pneumonia from the latest German authorities, for it is to them we owe its definition. First, we have catarrh of the minute bronchi, with its fine mucous *râles*, gradually becoming of a character impossible to discriminate from crepitation, except that they are heard on expiration as well as on inspiration; next, signs of consolidation, beginning at the base and spreading rapidly upwards, and usually bilateral. These signs are often difficult of recognition. Above all, there is an indefinite limitation of disease, as judged by its physical signs. The evidence of infiltration is often doubtful. Certain tracts of lung become of diminished volume; or, again, an increase of volume may occur. The pathological conditions represented by these two opposite states are, collapse of a tract of lung, and infiltration of a similar tract, causing induration. A simple deficiency of breath-sounds accompanies the former; the latter will, of course, be indicated by bronchial breathing and voice. With the loss of such respiratory space, there is a proportional dyspnoea and lividity. The fever is of varied type— $102.4^{\circ}$ , with remissions. It is not typical, because it does not reach the height of croupous pneumonia, nor fall to that of ordinary phthisis; and, on the whole, there is a want of relation between the local and the general symptoms. Often there is fever before physical signs, and fever with waste; for one is the measure of the other. It is held, indeed, that fever is caused by the presence in the blood of septic material—in this instance, probably the detritus of local degenerations. Have not, then, the degenerations preceded the fever?

The pathological results of catarrhal pneumonia are, sero-sanguineous exudation into the alveoli; desquamative epithelial products, which block the air-cells; and, if the attack proceed long enough to cause infiltrations, the walls of the cells are thickened; numerous lymphoid cells appear in the blood-vessels and in the interstitial connective tissues, having escaped from the blood-vessels. Later, degenerative changes occur of the caseous kind. Isolated nodules, from the size of a pea to that of a hazel-nut, are found within the collapsed portions of lung; and these often become confluent, so that an entire pulmonary lobe may be so occupied. These nodules degenerate, and may form cavities. Examined in a later stage than this, the lung is found contracted; its connective tissue increased, so that a section presents thick whitish-gray bands of fibres. There is pigmentation in patches, and dilated bronchi are not uncommon. Albuminuria is a not unfrequent complication. This form of pneumonia has received the names of desquamative, catarr-

rh-al-cheesy. It is distinctly held to be a *non-tubercular* disease. Tubercle may be developed in the later stages; but the disorder is held to be inflammatory; and hence the new doctrine and the old stand in opposition. Laennec and his school would have taken such lungs as I have described to be tuberculous. The cheesy masses would have been ascribed to the secondary changes undergone by grey tubercle, which should have certainly preceded the caseation. There seems, however no doubt whatever that such changes may occur; and such patients may die without the development of a single tubercle. It is true that groups of tubercles are almost always found; but they are secondary, of recent formation, and short-lived, often not sharing in the softening degenerative changes undergone by the other indurations in the lung. "The differential diagnosis between a catarrhal pneumonia," says Jügensen, "developed from an acute bronchitis, and one developed from a tubercular bronchitis, must depend chiefly on the history and on the course of the disease before the occurrence of consolidation." "Whenever groups of tubercles in the lungs are associated with catarrh of the finer bronchi, it is very difficult to distinguish them from catarrhal pneumonia." To you, gentlemen, who have kindly followed me, and who have compared these descriptions with your clinical experience, it will be evident that I have been describing to you a phthisis. In such a case, it is not "very difficult," but impossible, to distinguish the two affections.

I have dwelt on this description, however, for a clinical purpose. Names change; but diseases remain the same. If these lung-changes are due to an inflammation, and not to a constitution or innate depraved process of blood-making, may we not be more hopeful about some of their forms, and predicate with some certainty how some may rise from the hopeless into the remediable class of affections?

I desire to contrast with this description of catarrhal pneumonia that which the same German school (and, following in their track, the English) have accepted pretty generally as applicable to chronic phthisis. The affection is characterised by "waste," as its name implies; and it is applicable to several forms of disease different in character, but all possessing, as common features, a constantly increasing emaciation and gradual destruction of life. Phthisis is multiform, but has family features connecting all its varieties, and a widely differing progress, and an infinite variation in duration. Some die of it in weeks or months; others survive its structural changes for years. We shall inquire into the causes of such diversity, and endeavour to select living features which shall enable us to detect them when brought before us.



Tubercle is, then, not an essential element in the disease; but, when found, is a secondary superadded result, arising from infection, or the resorption of inflammatory results in the individuals themselves. Tubercle is a short-lived product, arising from inflammatory residua which have undergone degeneration—caseation—and been conveyed into the system, or to distant parts of the lung or other organs, by the blood-vessels and lymphatics, or even directly by the air-tubes. Tubercle probably lives but some weeks or months; but the changes in the lung formerly ascribed to tubercle may last for years. But how does this self-infection arise? What is the origin of the disease which furnished the infecting source? For there is no such thing, according to this school, as chronic miliary tuberculosis. Phthisis is anatomically a chronic inflammatory disease. It is a specific variety of inflammation, with characteristic caseous secondary changes, which are, indeed, only the death of the product. It undergoes a necrosis. Not being provided with vessels, and its vascular supply being cut off by the thickened and altered perivascular tissue, the vessels are strangled. Of course, pathologists of this school are forced back on a primary cause, as were the preceding generations; and, if lung-changes do not arise spontaneously, it is necessary to account for them. A catarrh of the minute bronchi will not, in a healthy person, originate a phthisis; but a neglected catarrhal bronchitis in a scrofulous person will do so. Scrofula, then, is the key to the whole sequence of changes. In a scrofulous person, inflammatory changes are slow; they cause permanent infiltrations of the cellular connective tissues of organs, which caseate and die. An exudation of large cells occurs, which swell up, and undergo necrosis; and the detritus passes into the lymphatics, and is thus transported into the subepithelial connective tissue. The exudation is hard, dense, grey and unprovided with blood-vessels; so that necrotic changes soon begin, and in those changes the walls of the air-cells and the surrounding perivascular and peribronchial tissues participate. Such indurations know of no recovery. They may degenerate and be removed, leaving a hole in the lung; but they are never organised and absorbed. The first step, indeed, in the history of a restoration to health in such tissues, must necessarily be a restoration of a healthy circulation; and this does occur around all cavities which may close and cicatrise.

But how does phthisis arise? how does scrofula become tubercle? or how does the lung-affection, with all its changes of structure which we have been considering, and call phthisis, commence from an infection? If it be a result of infection—a

self-poisoning—the poison must have originated somewhere else, and this argues an antecedent disease of a part, for it is no longer pretended that the blood or humours elaborate a septic material to be deposited in the meshes of the lung-tissues. The reply is, that a scrofulous disease of mucous membrane, or of joints, or of a lymphatic gland, has furnished the detritus of a caseation which was afterwards carried by vessels or lymphatics into the lung, and originated the destructive changes in question. You see, those holding this doctrine have abandoned the theory of a general disorder of the blood or system reflecting itself in a local disease, and come to the conclusion that a local disease of some distant part has originated another local disease by infection; thus the mind is carried to *localisation* of disease as a primary factor and an originating cause in an affection hitherto considered constitutional. It is the tendency of the matter-of-fact mind of the day to believe only in influences which we can test and handle and examine with the scalpel and the microscope! And yet—as a sage observer has remarked—“at bottom, we are all believers in the theory of humours.” I see, in this recognition of the vast importance of structural change in all vital disorders, although it may surpass our means of proof, a key to much that is of value in prognosis and treatment. For it does, indeed, depend on the nature, the limit, and the proclivities of diseased products whether structures can be repaired, indurations dispersed, or changes tending to life and organisation, or to death and degeneration shall take place. And, in treatment, if the fever and wasting be a measure of the inflammation in a part, we can hope to moderate *both* by checking it in the affected organ; but if these formidable symptoms be a blood-dyscrasis only, we are lost in the search for blood-remedies which shall meet and modify or reverse them.—*British Medical Journal*, January 1, 1881, p. 1.

---

#### 21.—ON FRAENTZEL'S ANTISEPTIC TREATMENT OF EMPYEMA.

By Dr. G. B. FERGUSON, Surgeon to the Cheltenham Hospital.

Mr. Moxhay having in the *Lancet* of January 15, narrated a case of empyema treated with noteworthy success after Fraentzel's method, as detailed in Ziemssen's *Cyclopædia*, I would wish to further place on record, to the credit of this method, two cases treated in the Cheltenham Hospital about eighteen months ago.

The first case was that of Annie M——, aged twenty-seven, who was admitted in July 1879. About a year previously she had had pleurisy, followed by empyema, and had been treated



in a great provincial hospital by aspiration, and afterwards by a drainage-tube. Nevertheless the fetid discharge continued, with temporary abatement only, and when first seen by myself she was exhausted and emaciated, was suffering from cough and hectic fever, was reported to be phthisical, and was not expected, at the utmost, to outlast a few weeks. Following Fraentzel's directions, a free incision, three inches long, was forthwith made anteriorly between the sixth and seventh ribs, and forty-five ounces of fetid pus were evacuated. A silver canula was then inserted between the ribs, large enough to admit at once two No. 8 Jacques's india-rubber catheters. Through one was injected a stream of warm 1 per cent. carbolic lotion, which, with the residual pus, found its way out through the other, and this washing was continued till all was clean and sweet. The case was being necessarily in some degree septic, the spray and formal dressings of Lister were omitted in favor of a simple gauze bag of carbolised tow, which was kept closely applied to the side. This washing process with carbolic lotion was continued twice daily for a fortnight; after which an iodine solution (tincture of iodine, two drachms and a half to one pint) was substituted for it and employed once daily. Speedily the discharge, which had already sunk to a drachm or so in a day, became quite insignificant, and the washing fluid from the first returned almost clear. After another month, there being still some trifling oozing, a 5 per cent. solution of common salt was used for washing purposes, and the silver canula was replaced by a small india-rubber drainage-tube. After three months in all she left, having discarded the drainage-tube and with a nearly healed sinus. Three months after leaving I saw her again with the sinus firmly healed, her cough gone, increased nearly two stone in weight; in brief perfectly well.

The second case, that of Clara A——, aged seven, admitted soon afterwards under the care of my colleague, Mr. Bennett, was equally satisfactory. Here the history was successively of scarlatina, dropsy, pleurisy, and empyema. The empyema, however, was not allowed to discharge itself, but Fraentzel's method with full Listerian precautions was adopted, and a pint of pus was removed. The twice and afterwards once daily washings were duly continued, and after a month I read in the hospital note book that the discharge had almost ceased. Five months afterwards the same book contains a mention of the firmly healed condition of the resulting sinus and of the perfect restoration of the patient. I trust I may be right in my surmise that few institutions in this country have been more prompt than the Cheltenham Hospital to adopt this notable advance in the treatment of empyema.—*Lancet*, March 5, 1881, p. 367.

## 22.—ON RESPIRATORY IRRIGATION : A NEW METHOD OF AFTER-TREATMENT IN EMPYEMA.

By C. McIVHOR GOYDER, Esq., L.R.C.P., Senior House-Surgeon,  
Newcastle-on-Tyne Infirmary.

When an empyema of the lung has been treated by incision with or without the resection of a portion of rib, and the case is treated antiseptically, healing by granulation and adhesion of the two layers of the pleura takes place oftentimes in a satisfactory way, and the case progresses to recovery in a manner leaving nothing to be desired. It as often, and perhaps more frequently, happens that when about two-thirds of the cavity have been obliterated the remaining third is slow to heal, the pleural surface continues daily to discharge a quantity of pus, the patient's health is undermined, and he becomes the subject of thoracic fistula, or the victim of tubercle or of waxy disease. It is hence an important matter to secure the total closure of the pleural interspace, and with such an object in view I venture to suggest the following treatment, which, through the kindness of Dr. Drummond, one of the physicians to this hospital, I have had the opportunity of trying. Some details of the case, so far as it has gone, will be subjoined.

The cavity of an empyema is an abscess cavity, and as such should be drained of its contents. Its walls also should be approximated in order to obtain if possible that secondary union by granulation which the surgeon attempts to obtain in limbs by pressure and careful bandaging. The contents of an empyema should be kept aseptic and the absorption of septic material prevented. Lastly, an empyema should be irrigated in order to wash away stagnant secretions. I am hopeful that these essentials of treatment will be gained by the process to be described.

Whilst dressing the patient referred to, I was one day disappointed to find how much pus had accumulated in the pleural cavity on removal of the antiseptic dressings, and I determined to attempt to drain the cavity by placing the patient on the affected side with the wound lowest, at the same time inserting one end of a gutta-percha tube (eighteen inches long and a quarter of an inch in diameter) just within the cavity, and allowing the remainder of the tube to hang vertically downwards through a hole in the mattress, placing the opposite end in a jar of carbolic lotion. I should add that I attached the tube to the side by means of tapes carried round the body. My object was, of course, to prevent the entrance of air into the pleural cavity, and at the same time to drain the contents of the sac by gravitation.

After watching the arrangement for some time, I was surprised to find the level of the fluid in the jar sinking during



inspiration, and again rising during expiration; and upon closely watching the continuity of the tube, I found it straighten itself somewhat at every inspiration. The fluid was, in fact, rising and falling during inspiration and expiration respectively. I next placed a piece of glass tubing in the continuity of the tube, near the chest-wall, and replaced the carbolic with Condyl's fluid in the jar. I was at once gratified by seeing the pink Condyl rushing up and down the pipe at every respiration. Now replacing the jar by a graduated measure, I found that something less than half an ounce of fluid was drawn up at every normal inspiration, and four ounces at every deep inspiration; the same quantities were ejected with corresponding expirations.

We have, then, a method of irrigation of the chest whereby the interior of an empyema is bathed at every respiration—a method which is constant, automatic, and to a certain extent under the control of the patient. The patient's position will ensure drainage by gravitation. The compression of the chest wall by means of a Martin's bandage (a method I have found useful in holding the tube in position), the patient's own weight as he lies on his affected side, and the hydrostatic pressure of a circular water-cushion around the tube, besides adding comfort to the patient, will all tend to produce that approximation of the two pleural surfaces and falling in of the chest wall which is so desirable. Lastly, the constant bathing of the interior of the sac with an antiseptic non-irritating fluid at the temperature of 100° F. ensures asepticity, and at once removes those products of inflammation at the site of their formation. The essentials of treatment before indicated are thus fulfilled.

Without entering into any details of the case in which I have used the above method of irrigation, suffice it to say that this plan was commenced on Dec. 7, 1880, and has since been continued, with the exception of an occasional night, and is indeed still being used. During the five weeks that have elapsed the patient's temperature has ranged from 99° F. to 100° F., having only twice reached 101° F. He has gained four pounds in weight; he sleeps well, although the irrigation is continually going on. His appetite is good, tongue clean, and skin moist; he has no night sweats, and does not suffer any inconvenience from the process. Meantime the cavity is apparently getting less and the lung expanding. The jar of Condyl's fluid is changed hourly. The tube is removed once in the twenty-four hours, and is then well cleansed in carbolic lotion. Upon removal of the tube no fluid of any kind escapes, although the air goes freely in and out of the chest.

The tube is made of stout black rubber such as is used for

drainage-tubing, but it is not perforated laterally at all. Upon introducing it gently into the sinus a point is reached where resistance ceases, and where air is heard to rush through it. It is then fastened in by tapes which encircle the body; and when in position the upper opening of the tube should be *flush* with the inner surface of the parietal pleura. A Martin's bandage is then wound round the chest, and is adjusted above and below the tube. The patient is next placed on his affected side, with the tube through a hole in the bed, and between the patient's body and mattress a ring water-cushion is placed. This renders the patient comfortable, and makes even pressure on his chest-wall. Hot Condyl's fluid in the jar completes the arrangement; and the patient having made a full expiration, the free end of the tube is placed in the jar before the patient inspires. When he does so the pink fluid rushes up the tube, and thus air is prevented from gaining access to the chest.

Before concluding this paper, a few points occur to me which I trust may be of interest. The washings from the pleura were for some days set aside and deposited, and in those which were the first results of the process, shreds of lymph were very plentiful, also pus-cells, but at no time have blood-cells been seen. Regarding the mechanism of the process, the chest-walls, by their expansion, seem to create a partial vacuum, and this doubtless is greatly aided by the descent of the diaphragm. Hence the fluid enters during inspiration, and is emitted during expiration. That wall of the empyema formed by the expanding lung is apparently fixed, for were its expansion the cause of the entrance of fluids during respiration, these would be ejected during inspiration and drawn in during expiration; this is, however, not the case. It appears to me that the diaphragm is the great discomposing agent in these cases, and that were it possible to confine the movements of this muscle, one of the greatest difficulties in the attainment of mechanical rest would be removed.

In the very tranquil breathing of sleep, fluids arise only to the top of the pipe, and I think that however small the tendency, yet the weight of a column of water fourteen or sixteen inches high *does* tend to approximate the roof and floor of an empyematous sac, and that this is an agency for good.

I have noted above that the portion of tube in the chest was not perforated laterally, and I am sure that when these holes in tubes exist, the granulations quickly spring up and enter the perforations, seriously invading the calibre of the pipe. In fact, the granulations lining the sinus grasp the tube so firmly as to effectually prevent the entrance of air into the chest cavity *outside the tube*, and this in a case where a portion of rib has been resected.



As to the fluids with which to irrigate, I found carbolic acid solution (1 to 100) absorbed so quickly as to give rise to black urine in two days. Condyl's is a very much pleasanter solution to work with, and the degree of interchange between it and the fluids of the sac is shown by the rapidity with which the solution becomes decolourised. From boracic acid solution I anticipate good results, and there are many other antiseptics of a similarly unirritating nature.

It may be objected that I have written more fully on this subject than the experience of one case can warrant, particularly as in that case irrigation is still *sub judice*; but I shall have accomplished my object if I have in any way pointed out a treatment which may be useful in a class of difficult cases. I should not like to conclude without stating how much I am indebted to Dr. Drummond for his kindness in the above case, nor without expressing a hope that the result may prove satisfactory to his patient.—*Lancet*, March 5, 1881, p. 366.

---

### 23.—ON THE TREATMENT OF ASTHMA BY THE INDUCED CURRENT.

By Dr. I. BURNEY YEO, Physician to King's College Hospital, and Senior Assistant-Physician to the Brompton Hospital.

The recent discussion on Asthma at the meeting of the British Medical Association at Cambridge gives especial interest to the following notes of a case which has lately been brought under my own observation. Two or three days after taking part in this discussion I found myself at the baths of Neuenahr, the guest of that able physician, Dr. Richard Schmitz; and I had an opportunity of seeing and examining with him an aggravated case of asthma, which had been treated by the application of the induced current, and apparently completely cured thereby.

This patient, a gentleman about forty years of age, had suffered from paroxysms of asthma for more than six years, originally induced, he believed, by a severe attack of catarrh. He had tried numerous remedies and visited various climates, but without any considerable relief. This year he was spending a second season at Neuenahr, but without any relief to his asthmatic attacks. Quite recently he was seized with an attack of unusual severity and duration, which had lasted, with but slight intermission, for three whole days and nights, when, as all other resources had failed, it occurred to Dr. Richard Schmitz to try the effect of the induced current applied in the manner suggested by Dr. Max Schaeffer of Bremen. The relief afforded was immediate, and after twelve applications—i.e., an application twice a day for six days—the patient appeared quite

well. I examined his chest carefully, and there was no trace of wheezing or of dry or moist râles of any kind. I examined his throat, and found evidence of chronic pharyngitis, the mucous membrane being very granular from the presence of many enlarged swollen follicles; but it was quite clean, and free from mucous secretion. The tonsils were scarcely at all enlarged, although they had been much so formerly. I mention these facts with respect to the condition of the throat, as they bear on the theory of the action of the remedy to which I shall immediately allude. The influence of the remedy had been so complete that the patient's gait and carriage were totally changed, and instead of assuming the bent, stooping figure of the asthmatic, he walked as upright as his fellows.

The galvanic current had been applied to the throat in the situation of the great nerve trunks, the vagus and sympathetic, each pole being applied just below the angle of the jaw and in front of the sterno-cleido-mastoideus. The current, mild at first, was gradually increased in intensity until it could be distinctly appreciated by the patient as passing through the soft palate from one side of the throat to the other. It was continued for fifteen minutes at each sitting. It was noticed that the pupils, widely dilated at first, became strongly contracted as soon as the application of the current gave relief. Dr. Max Schaeffer, who has recently advocated this treatment, agrees in the main with Biermer as to the pathology of idiopathic asthma, meaning by *idiopathic* asthma those attacks in the intervals between which no evidence of morbid changes in the lungs can be found. He regards these attacks as a tonic spasm of the middle and finer bronchial tubes; but he looks upon the spasm as secondary, and agrees with Weber in believing the primary change to be a swelling or tumefaction of the bronchial mucous membrane, dependent on a fluxionary hyperæmia, itself due to a vaso-motor nervous influence, the principal rôle being played by the pulmonary fibres of the vagus. According to this view asthma is an irritative and reflex pulmonary neurosis. It agrees, in many respects, with the theory of asthma adopted by Dr. Andrew Clark in the discussion to which I have alluded, and which I hold myself as the most consistent with the clinical history and phenomena of the asthmatic paroxysms.

The morbid state, upon which the asthma depends, may—affect (1) the nerve itself, or (2) the coverings of the nerve, or (3) the tissues adjacent to the nerve.

Max Schaeffer lays great emphasis on the third of these conditions—viz., that morbid states of the structures adjacent to the nerve may influence and disturb the nervous currents. Tumours such as nasal polypi, hypertrophied tonsils, swollen



cervical or bronchial glands (temporary hyperæmia of these glands), can, according to their position, cause irritative pressure on nerve filaments connected with the respiratory centres. He found that many of his asthmatic patients were the subjects of nasal catarrh, or pharyngeal catarrh, or laryngo-tracheal catarrh. He noticed that swellings of the mucous membranes of these parts were attended with asthmatic paroxysms, and patients would constantly refer the seat of their discomfort lower or higher in the throat, according to the seat of the swelling, and he concludes that all the symptoms of asthma are symptoms of irritation brought on by pressure on nerves which are in connexion with the pulmonary portion of the vagus, and especially in the upper part of the respiratory tract—the pharynx, larynx, and trachea.

He examines carefully the nose and throat, and applies the electrodes according to the seat of the disease. Usually the two electrodes are placed on each side of the neck about two centimetres below the angle of the jaw, and sometimes a little lower down in front of the sterno-cleido mastoideus. The current must be of good strength, so that the patient can feel the stream go across the larynx and soft palate. In bad cases it should be applied twice a day from fifteen to thirty minutes each sitting. He states that in the most severe cases it has acted “like witchcraft.” He has never found the constant current do any good, but he has never failed with the induced current.

Certainly the result of the application of the induced current in the case that came under my own observation was very remarkable.—*Lancet*, Nov. 13, 1881, p. 761.

---

#### DISEASES OF THE ORGANS OF DIGESTION.

---

##### 24.—ON CATARRH OF THE STOMACH IN CHILDREN.

By Dr. EUSTACE SMITH, Physician to H.M. the King of the Belgians, Physician to the East London Children's Hospital, and to the Victoria Park Hospital.

Catarrh of the stomach, unaccompanied by fever, is perhaps the commonest derangement to which children are exposed. It is a constant danger to hand-fed babies, and forms, indeed, the chief obstacle to the successful rearing of infants. Even in the case of older children, if of frequent occurrence, it may seriously affect nutrition, and interfere with development and growth. Most children suffer at times from what is called “biliousness.” For two or three days together they lose their appetite; mope and lie about; have a dull, pasty, or sallow complexion, and look dark under the eyes. At night they sleep

badly, and they are restless and irritable in the day. These symptoms are produced by a temporary catarrh of the stomach, which interferes for the time with the digestion of food, but, passing off, leaves no ill consequences behind. When, however, the attacks are frequent, digestion is weak even in the intervals of comparative health, and nutrition becomes seriously impaired. Such children complain often of flatulent pains in the sides, and may be subject to attacks of syncope from pressure upwards of the distended stomach against the heart. Their bowels are usually costive.

These symptoms may be greatly aggravated by an injudicious dietary. If a child who suffers from the condition described be supplied with an excess of fermentable food, such as potatoes, puddings, jams, and sweet cakes, he is kept in a state of chronic acid dyspepsia, which is a source of constant discomfort to himself and anxiety to his friends. The whole system being full of acid, generated by fermenting food, the child is wayward and cross in temper, and excessively fidgety and restless. His speech is often hesitating, and he may stammer in his talk. His muscles are irritable and twitch easily, so that he winks his eyes and distorts in nervous fashion the corners of his mouth. The so-called nervous habits of children often owe their origin to this derangement.

Sickness is not a common symptom in these cases, for gastric catarrh is by no means always accompanied by irritability of stomach. Sometimes, however, the child at rare intervals brings up a large quantity of sour-smelling fluid and mucus. Frontal headache, more or less severe, is rarely absent, and oftentimes the pain is very distressing. The wearing periodical headaches of children are usually owing to this cause. The urine is from time to time noticed to be thick with lithates, and, in rare cases, quantities of fine uric-acid sand are passed, precipitated by the free acid with which the urine is charged. At such times the urine may contain a trace of albumen.

Symptoms such as the above show a high degree of digestive derangement, aggravated by an unsuitable dietary, and are almost invariably the consequences of repeated attacks of catarrh of the stomach. Under such circumstances nutrition is interfered with, the child wastes perceptibly, and the apprehensions of the parents are carried to a high degree. When, on the other hand, the indisposition is only occasional, and the symptoms are not severe, little attention is excited. The child is supposed to be a "bilious" subject, and unless the attacks become so frequent as to cause an evident diminution in bulk, or some new symptom is noticed which excites the alarm of the friends, medical advice is considered unnecessary.

In cases where, owing to the mildness or the infrequency of



the attacks of gastric development, general nutrition has not suffered, the occurrence of fainting-fits may induce the parents to apply for medical assistance. Attacks of syncope, more or less complete, are not uncommon in these cases. They, naturally enough, give rise to great anxiety; especially if conjoined with palpitations and flatulent pains about the chest. They are then considered to be symptomatic of heart disease. Thus:—"Miss W——, aged eleven years and a half, fainted for the first time six years ago. She has since fainted on five different occasions. At these times she has always been noticed to be dull and languid, with a poor appetite, but otherwise has seemed to be well. Is subject to sharp pains in the left hypochondrium, under the influence of which her face will become ghastly white. She sleeps badly, talking and moaning, and often lies awake at night. Has never suffered from worms; bowels constive. Has sometimes a sallow complexion." This young lady, who was a well-grown, well-nourished girl, with perfectly sound organs, soon lost all her symptoms under suitable treatment.

Whether the gastric catarrh assume the febrile or the non-febrile form its treatment is the same. Our object is, firstly, to put a stop to the existing derangement, and, secondly, to adopt such measures as will prevent its recurrence.

To cure the existing catarrh we must do our best to remove all sources of irritation which may be keeping up the disorder. The acrid mucus, a free secretion of which is one of the ordinary phenomena of the catarrhal state, is a constant cause of fermentation and acidity. It very quickly induces an acid change in the more fermentable articles of food. Therefore, if the stomach be oppressed by sour matters, shown by uneasiness at the epigastrium, or sour smell from the breath, and a feeling of nausea, immediate benefit will be derived from an emetic dose of ipecacuanha wine. Afterwards a draught, composed of tincture of nux vomica, with bicarbonate of soda, in water sweetened with spirits of chloroform, taken two or three times in the day, will soon restore the gastric mucus membrane to a healthy condition. Strong purgatives are to be avoided, but as there is usually constipation in these cases, an occasional mild aperient will be required, such as compound liquorice powder or castor oil. If there be fever, which does not subside after the action of the emetic, the child may be allowed to take fluids from time to time in moderate quantities. The best are unsweetened barley-water, flavoured, if desired, with orange-flower; toast-water, or fresh whey.

During the treatment, as long as any signs of acidity of stomach persist, care should be taken to exclude from the diet all matters capable of favouring the tendency to fermentation

of food; and even for some time afterwards, readily fermentable substances, such as starches and sweets, should be taken sparingly, lest the derangement be encouraged to return. At first nothing should be allowed but freshly made broths, with dry toast; and when milk is once more permitted, it must be guarded with a fourth part of lime-water, or with saccharated solution of lime, in the proportion of twenty drops to the teacupful. While the derangement continues no fruit, cakes, sweets, light puddings, or potatoes should on any account be permitted to be taken. When the appetite begins to return, a little fish, chicken, or mutton may be allowed, but the child must not be pressed to eat; indeed, until its digestive power be completely restored, the utmost care must be taken not to overload the stomach with food.

The above measures will effect a considerable improvement in the condition of the child, but at this point the treatment may be said only to have begun. The patient is in a weakly state from successive attacks of gastric catarrh. We have, therefore, to adopt means to strengthen the digestive powers, and take such precautions as will ensure him against a relapse.

To give tone to the stomach and strengthen digestive power preparations of iron are required. A common practice in such cases is to administer the preparation of the phosphates of iron and lime known as "Parrish's Chemical Food." This syrup is a very favourite remedy with mothers, who, misled perhaps by the name, give it largely, and with the worst results. Theoretically, no doubt, it is an active tonic, but practically it is highly pernicious. The reason is that the syrup in which the phosphates are dissolved supplies materials for fermentation, and each dose is soon followed by flatulence and acidity; so that the medicine really aggravates the mischief which it is intended to allay. The better plan is to give the dialysed iron, or, if there be any tendency to acidity remaining, the ammonio-citrate, with a few grains of bicarbonate of soda, sweetened with aqua chloroformi. After a time a change may be made to the solution of strychnia, with the perchloride or perntrate of iron, given directly after food. All this time the quantity of fermentable material taken at meals must be restricted, as already recommended. During the same time a mild aperient should be given every few days, whether it seem to be required or not, to ensure a proper relief to the bowels and prevent the retention of any excess of mucous secretion.

In spite of this treatment, however, the child will not be secure against relapses unless special precautions be taken to guard the body against chills. The catarrhal state, whatever be the organ affected, tends constantly to repeat itself under the influence of slight causes; and there is little doubt that it



induces an extreme sensitiveness to changes of temperature. Children who suffer from attacks of catarrh of the stomach or bowels should wear a broad flannel binder applied tightly to the abdomen, so as to reach from the hips upwards to the arm-pits, and the medical practitioner should look upon it as his first duty in these cases to see that it is properly applied. The binder should be considered as a part of the child's ordinary dress, and be cast off at night with the rest of his clothes. In many cases it is necessary, in addition to the above precautions, to fortify the resisting power of the child by cold bathing. Some circumlocution is, however, often necessary in recommending this step to parents. Mothers are apt to take fright at the very mention of cold water; and it is true that in the case of weak children reaction is difficult to establish, so that a cold bath given in the ordinary way would not be attended with benefit. There is, however, a method by which the most delicate child may take a perfectly cold bath with safety and advantage. The method consists in first stimulating the skin by friction, so as to enable the body to resist the shock of the cold douche, and then in lessening the shock itself by placing the patient in hot water. Thus, if a child on rising from its bed be well shampooed over the whole body, but especially over the back and spine, and be then made to sit in a few inches of quite hot water, a good douche of cold salt water over the shoulders will have a highly invigorating effect, and be followed by immediate reaction. After being dried, the body may be rubbed with flesh gloves, and afterwards, if thought desirable, the child can be returned for a short time to his bed. Before beginning the process the patient should take a little bread-and-butter, or a drink of milk. The continued use of this bath, besides having a remarkably tonic effect upon the system generally, confers great resisting power against changes of temperature, and considerably reduces the child's susceptibility to chills.

By means such as have been indicated, the most obstinate cases of gastric catarrh may be treated with success. But it should be borne in mind that success depends upon equal attention to all the points which have been insisted upon. A flannel binder will be of little value if the tendency to fermentation be encouraged by the immoderate use of starches and sweets; and even cold douching may not be sufficient to neutralise the ill effects of rapid changes of temperature acting upon a body imperfectly protected from the cold. In all cases it is advisable to avoid the use of syrups in making medicines palatable to young children. The Pharmacopœia syrups are not well borne by young subjects, and often do more harm than good. It is far better to sweeten a child's physic with glycerine, or a few drops of spirits of chloroform.—*Lancet*, Nov, 27, 1880, p. 847.

## 25.—ON FLATULENT DISTENSION OF THE COLON.

By Dr. R. W. BURNET, Physician to the Great Northern Hospital.

When one meets with patients suffering from a sense of fulness and discomfort in the epigastrium, with more or less pain in the right or left hypochondriac region and in the back, or, as they often say, "through to the back," one generally finds they have come to the conclusion that their liver is at fault, and they have had recourse to the usual popular measures for reducing to order the offending organ.

In a large proportion of cases the source of the trouble lies in the colon—in those cases, namely, where, on examination, we find that the large bowel has become distended in some part of its course, and by pressure on the surrounding organs and structures causes the symptoms of which the patients complain.

Assuming then for the moment that such a condition as flatulent distension of the colon does exist apart from the distension from stricture caused by the cicatrisation of ulcers, by malignant disease or by pressure from without, what are the causes that lead to it? In general we may say that everything which tends to bring about a relaxed and atonic condition of the mucous and muscular coats of the bowel is a predisposing cause. The patients are for the most part women, and they are women who are more or less sedentary in their habits and whose tissues are soft and flabby; they have usually suffered at times from gastro-intestinal catarrh, from irregular action of the bowels and from constipation, for which they have been in the habit of taking quantities of aperient or antibilious pills and other purgative medicines. In some the excessive use of brown bread of the coarser sorts seems to act unfavourably on the mucous membrane, and in one well-marked case in a gentleman it seemed to follow a prolonged course of hydropathic treatment where, in addition to the use of all varieties of hot and cold baths, the patient had for some time worn compresses round the abdomen. Such agents as these bring about an irritable condition of the mucous membrane, together with a want of tone in the walls of the bowel. The site of the pain I think throws some light on the immediate cause. I have said that it is very frequently in the right or left hypochondriac region—*i.e.*, in the parts of the bowel preceding its sharp curves, the hepatic, the splenic, and the sigmoid flexures. In women the configuration of the body and the mode of dressing tend largely to impede the free movements of



the parts upon which the tight garments press, and looking at the colon as a tube, we see how largely it will be affected by these restrictions. An indiarubber tube through which a stream of water is passing will, if sharply bent, dilate and even burst before it allows the water to pass. Again, any lodgment of fæces or other irritating cause may set up spasmodic contraction, and if this occurs, as is most probable, at a part where the calibre of the bowel is already narrowed, the consequence is distension behind the site at which the impediment exists.

Coming now to the symptoms which characterise this condition: the patient looks worn, and he may even be depressed and haggard; the complexion is muddy and wanting in that clearness which characterises perfect health; the tongue is whitish or dry, and coated, often marked at the edges by the pressure of the teeth; the pulse is natural in frequency, but soft, compressible, and easily excited; palpitation and "fluttering of the heart" are frequently complained of, accompanying a sense of fulness and weight which they experience sometimes after meals. Along with the more distinctive symptoms, there are the general ones of languor, headache, nervousness to a greater or less degree, and usually very marked depression. Here I would notice in passing the remarkable association that there is of mental depression with affections of the lower bowel. Whether the relation is sufficiently close to warrant its receiving the name of "colonic melancholia" I am not prepared to say, but I think it cannot be denied that the depression of spirits which accompanies disorders and diseases of the colon and of the rectum is out of all proportion to the extent of the mischief. A recent writer on constipation, speaking of the effects of that condition on the nervous system, looks upon it as the result of blood-poisoning from absorption of some part of the fæcal matter, and no doubt this takes place in cases of long-standing constipation; but from cases of the nature of those I am now considering, it is evident that a further element is involved. Why is a patient with flatulent distension of the colon utterly dejected, while one with lumbago is howling every time he moves, and then laughing at himself for crying out? That there is an intimate connexion between the state of the bowel and the state of the mind I feel sure, but am unable to offer any satisfactory explanation of the fact.

Patients who are the subjects of the affection now under consideration are liable to sudden attacks. At one time, as already mentioned, it is a heart attack, by which I mean more than a mere fit of palpitation. They have great dis-

comfort in the cardiac region, and feel "as if the heart were going to stop." At other times it is an attack of colicky pain usually in some part of the colon. Indeed, in describing the different places at which at one time or another they have had these pains they often point out exactly the course of the colon, commencing below the hepatic flexure, and following it across the epigastric to the left hypochondriac region. In their depressed state a sharp attack of pain of this kind alarms them, and they conclude that they are suffering from inflammation of the bowels. Except the pain there is, however, no symptom common to this condition and to enteritis, and even the pain is quite dissimilar in character. It is variable; it is more or less widespread; it is not only not increased, but is usually rather relieved by pressure; it is temporarily relieved by the action of the bowels, especially if some flatus be got rid of at the same time; it is shifting, or at least somewhat movable, for patients say that they "have to hold their side," and that when they do so the pain is lessened or shifts to some other part of the bowel.

Physical examination reveals a distended colon. On palpating the abdomen we have in some part of the course of the colon a feeling of resistance, and by careful handling we may make out the rumbling of flatus under our fingers, with sometimes the jumbling of fluid in the distended bowel. On percussion we get a tympanitic note over an area more or less extensive, and corresponding to the amount of distension. Exceptionally we find slight tenderness, but usually even firm pressure causes no uneasiness.

In considering the treatment of the affection I am now speaking of, we must have regard to the causes that have been at work in bringing it about, and to the habits of diet and mode of life in each case. If we can put our finger on the cause and remove it, we shall be far advanced in the treatment. We must find out whether the patient is in the habit of drinking much tea or large quantities of hot fluids, and if so we must considerably reduce the supply. The use of tea has a marked effect in aggravating the distension and discomfort, so much so that where the tendency to this state of bowel is strong, tea taken in any quantity will be almost certain to bring on an attack of pain. Patients have sometimes found this out for themselves, and have given up the use of tea. We must limit the diet to simple easily digested food, given in three or four small meals a day. We must exclude tea, coffee, malt liquors, and strong wines, also raw vegetables, pastry, sweets, and ices. The quantity of



liquid taken with food should also be limited to one breakfast cup or less with breakfast, half a pint in the middle of the day, and the same quantity with the evening meal. With the two latter we may allow in the water either a glass of claret or of dry sherry, or a half glass of spirit. If there is much tendency to constipation the simple remedy of a half tumblerful of fresh cold water, sipped the first thing in the morning and the last thing at night, will often aid the action of the bowels, and it seems to supply at a time when it does no harm the quantity of fluid required by the system. A daily natural action of the bowels should, if possible, be obtained, and this may often be gained by enforcing the habit of soliciting their action at a fixed time every day. Cold or tepid sponging followed by vigorous friction will also be useful. As far as drugs are concerned, the treatment is very much what we should adopt in ordinary colic and dyspepsia, at the different stages of these two affections. If there be much pain when we see the patient, and the condition be purely a temporary one, probably we shall most easily and speedily attain our end by giving a dose of castor oil, with or without a few drops of laudanum, and following it up, if necessary, by an enema. In less urgent circumstances we may give at night an alterative and aperient pill of blue mass, with colocynth and hyoscyamus, and in the morning an aromatic rhubarb draught. Such measures as these are calculated to give speedy relief for the time being, but we must endeavour to obviate the recurrence of the attacks, and we should probably have recourse to the good old-fashioned mixture of soda and gentian with aromatic spirits of ammonia, or to bicarbonate of potash with tincture of nux vomica and infusion of calumba, given twice or thrice daily, two hours after food. Sometimes ten drops of the tincture of nux vomica in a little water, three times a day, will answer well. Following this, we may give a pill of reduced iron with pepsin and extract of nux vomica and of belladonna with food twice daily.

In hospital practice, probably, the readiest and most useful medicines at this stage are the ordinary aloes and iron and the aloes and assafoetida pills. Finally, with a clean tongue and free secretion we should give a mixture of hydrochloric acid and extract of bark between meals twice a day, or the citrate of iron and quinine with a few drops of liquor strychniæ. When the mucous membranes are free these tonics undoubtedly bring about a healthier tone of the digestive organs and give excellent results.—*Lancet*, December 11, 1880, p. 931.

26.—THE ASPIRATOR AS AN AID TO DIAGNOSIS IN CASES OF OBSTRUCTION OF THE BOWEL, WITH DESCRIPTION OF AN ENTEROTOMY TUBE.

By Dr. RODERICK MACLAREN, Surgeon to the Cumberland Infirmary.

I purpose illustrating the use of the aspirator in cases of obstruction of the bowel by giving an account of the instance which drew my attention to its value; and as there are some other points in the case which are worthy of note, I will record its essential features.

Mrs. R—, aged forty-three, wife of a market gardener, was first seen by me on Tuesday, April 20, 1880. She stated that she had not had her bowels moved since the previous Thursday, though she had taken aperient medicine, and that she had vomited frequently for two days. She was seven months gone in pregnancy. On the following day (April 21) she miscarried, the child living only a short time. The treatment prescribed consisted in purgatives and frequently repeated enemata, some given with the long O'Beirne's tube. As this failed to give relief, she was next brought under the influence of opium, and subsequently belladonna was given. Each and all seemed to make her worse, and her condition was best when she was least interfered with. When she had been four days under treatment—this being eight days after the last motion—her state had become urgent; her pulse was very feeble, the vomiting frequent, and the abdomen distended and tense, so that the propriety of operative interference had to be considered. The probabilities were in favour of the obstruction being in the great bowel, for the following reasons: the symptoms were not very acute; the patient always passed plenty of urine; and she stated that for the previous six months she had difficulty with her bowels. This was not due to costive motion, for when she did succeed in getting them to act the consistence was natural. She had occasionally passed blood and mucus. Physical examination, however, gave no help; and it was a matter of extreme doubt in which part of the great bowel the obstruction occurred.

The abdomen on April 23 was uniformly and intensely distended; it was everywhere resonant, a trifle less so in each loin, and I thought rather less tympanitic in the right than the left, but the difference between either of these regions and the rest of the abdomen was very slight. No hardness or tumour could be felt. No faecal vomiting occurred. About a pint was the largest enema which could be given, and this usually returned unstained, but occasionally there was slight faecal colouration. Nothing abnormal could be felt per anum. There was no appearance of cachexia; the patient was a stout florid woman.



It was at this stage that I found the aspirator of essential service. So uncertain were the indications of the seat of stricture that it was a question whether it would not be better to open the small bowel close to the cæcum rather than risk a colotomy, with the possibility of finding the bowel obstructed above the opening. It occurred to me, however, that by opening an aspirator needle into the loin in the position of the colon I could ascertain whether this contained liquid fæces or not. The patient being placed under chloroform, with the kind assistance of my friend Dr. Murphy I aspirated the colon on the right side, preferring this to the left, because it was slightly less resonant on percussion. The aspirator withdrew air and liquid fæces, giving evidence that the closure of the bowel was below this point. I therefore performed right colotomy. The incision was a deep one, owing to the great amount of abdominal fat; and there was, from the same cause, some difficulty in finding the bowel,—the reverse of what is usually encountered. When the bowel was found, sutured to the skin, and opened, a large amount of flatus and fæces escaped. From the date of the operation the patient did thoroughly well. Five days after the colotomy some liquid fæces passed per anum. On the following day the same occurred, the motion containing much mucus. On the seventh day blood, mucus, and fæces were passed. From this period there was almost always a daily motion per anum, gradually increasing in consistence until she regularly passed a well-formed stool. At the same time liquid fæces escaped freely from the wound. On one occasion, a month after the operation, the bowel prolapsed through the wound. A recurrence of this prolapse was prevented by making her wear an enterotomy tube.

Six weeks after the operation the patient was out of bed. A week later the motions were so natural that I determined to see the effect of plugging the wound before deciding whether or not to let it heal. This was done by closing the tube. I arranged to see her again in a week, during which time she was to wear the plug if she felt no inconvenience from its use. On the morning of the day on which I had promised to see her she was found dead in bed by her daughter, who slept with her.

A post-mortem examination was made in the evening. The heart was found with a considerable covering of fat; the muscular fibre pale, and under the microscope mostly devoid of striation (her pulse had always been feeble and the heart sounds indistinct). Brain, lungs, liver, and kidneys were healthy. The large intestine was distended with air and contained a considerable quantity of solid fæces. The meso-colon was unusually free and large. A couple of inches above the

sigmoid flexure was a cancerous mass, measuring an inch in thickness, two inches from above downwards, and occupying most of the circumference of the bowel. A great part of it was undergoing colloid degeneration, and there was some pus in the interior. The opening through the stricture into the lower bowel was a fairly free one. The post-mortem examination was a very instructive one. It was evident why medicinal treatment had failed: purgatives merely forced the contents of the bowel against a closed stricture; sedatives paralysed the bowel and allowed flatus, &c., to accumulate. From ulceration or the absence of pressure, or some such cause, the stricture, after the operation, became permeable, and during the last few weeks of her life allowed fæces to pass readily. The free attachment of the great bowel explained how it was that the dulness on percussion, which is usually present above a stricture, could not be detected, the intestine not being in close contact with the abdominal wall.

Obstructions of the bowel are so often obscure that any aid to the diagnosis of their position, or any expedient which will help us in treating them, deserves careful trial. In the aspirator we have an instrument which will determine whether any given portion of the ascending or descending colon contains liquid or not. If it does, it is of necessity above the seat of stricture. The puncture involves no risk. I once saw a post-mortem examination on a case in which the aspirator needle had been pushed into various portions of the bowel within six hours of death, and yet all traces of its use had disappeared. When the presence of liquid fæces in a portion of the colon is ascertained, we know that opening the bowel there will relieve the urgent condition. In the above case the needle was of great service as a guide to the bowel (there is not usually any difficulty in exposing it; but this patient was so fat that the wound was a very deep one, and the intestine was covered by a layer of fat). The class of case in which aspiration is most likely to be useful is: when no stricture or fæcal accumulation can be felt per anum; when there is no decided evidence by percussion dulness of a large accumulation in either ascending or descending colon and yet the symptoms point to stoppage of the great bowel, not the small one. I should certainly trust to it to guide me whether to perform colotomy or, on the other hand, to do abdominal section, with the object of removing the obstruction, or opening the lower end of the small bowel.

I have mentioned that I used an enterotomy tube for preventing a prolapse of the bowel. This is a contrivance which I had formerly found of much use in cases of colotomy; it prevents prolapse of the bowel, keeps the opening from closing, and can be made so as to a great extent to prevent contact of fæces with the wound and skin. It consists of a piece of large



sized drainage tubing fastened at right angles to a plate of perforated zinc. The tube is passed into the bowel, the zinc lies on the skin, and is kept there by a band of tape going round the body. The tape is fastened to the zinc plate by india-rubber rings, so as to keep it tense. If it is desired to protect the skin, the tube is passed into the wound through a sheet of gutta-percha tissue. It has a considerable general resemblance to a tracheotomy tube.—*Lancet*, Nov. 13, 1880, p. 762.

---

#### DISEASES OF THE URINARY ORGANS.

---

##### 27.—NOTES ON THE PATHOLOGY OF THE URINE.

By Dr. CHARLES A. CAMERON, Professor of Chemistry and Hygiene, R.C.S.I., Medical Officer of Health, Dublin.

*Sulphuretted Hydrogen and Ammonia in Urine.*—I have not met with any account of the persistent occurrence of free sulphuretted hydrogen in the urine, but a case of the kind has come under my own observation. A gentleman in the middle period of life, of active business habits, and discharging the duties of a most onerous public appointment, has been for many years past frequently under medical treatment. His complaints are always of a somewhat indefinable nature. He suffers from malaise, a painful feeling of fatigue, and sometimes from want of appetite, but he is rarely confined to his bed or even his room. He works away steadily. He has been treated medically by Dr. Samuel Gordon, ex-president of the College of Physicians, who has enabled me to make examinations of his patient's urine. Now, there was nothing peculiar in the urine with respect to its specific gravity, amount of urea, or other points, with but one remarkable exception: it contained free sulphuretted hydrogen the moment it was passed. On one occasion I had the opportunity of examining this urine within a minute after it had been passed, and found, both by chemical tests and by smell, the presence of free sulphuretted hydrogen in it.

The amount of sulphuretted hydrogen was determined on two occasions: on the first it was found to exist in the ratio of 1·4 cubic centimetres per litre, and on the second occasion 1·9 cubic centimetres per litre of urine. These proportions are about one-third of the quantities found in very weak sulphuretted waters (Spas).

The period which elapsed after the discovery of the sulphuretted hydrogen in this urine until its disappearance was somewhat more than two years. During nearly the whole of this time the urine was never free from sulphuretted hydrogen; at least, every time it was examined or analysed such was found to be the case.

So soon as the sulphuretted hydrogen disappeared, its place was taken by ammonia; the instant the urine was passed it was found to have an ammoniacal odour. This state of things continued for about two years; but lately the urine has no longer an ammoniacal odour.

About the time that this sulphuretted hydrogen urine was being passed, Surgeon Hazleton of Westland-row, Dublin, introduced to me a young lady, from whose skin sulphuretted hydrogen was exhaled. I placed upon her skin pieces of bibulous paper, containing acetate of lead, and in the course of few hours they were blackened. When she was warm after exertion the odour of sulphuretted hydrogen from her was unmistakable. Silver coins, thimbles, &c., kept in her pockets soon became black. She was in good health. Her urine contained no sulphuretted hydrogen; whilst, on the other hand no odour of sulphuretted hydrogen could be observed from the skin of the gentleman whose urine contained sulphuretted hydrogen. In the case of the lady the exhalation of sulphuretted hydrogen lasted for about three years, and then completely ceased.

*Intermittent Occurrence of Sugar in the Urine.*—I make, now and then, examinations of the urine of a gentleman nearly sixty years old. Sometimes its specific gravity is from 1025 to 1037, and sugar in large quantities is present. At other times the specific gravity is from 1020 to 1023, but not a trace of sugar can be detected in it by any method. Sugar is more frequently present than absent. The quantity of urine passed per diem is generally, but not invariably, above forty ounces. Dr. Garrod has examined this gentleman.

*Low Specific Gravity of Diabetic Urine.*—Many years ago I examined several times a week during some months the urine of a young man (a patient of Sir George B. Owens), who ultimately died from diabetes mellitus. As a rule, the specific gravity of his urine rarely rose higher than 1030. He had an incessant and unallayable thirst. On one occasion I found his urine to have a specific gravity of 1005, sugar being present in small but decided quantity. The low gravity of the urine surprised the medical attendant, who indeed at first was incredulous that diabetic urine could have so low a gravity. The specific gravity of the urine was carefully determined by the specific-gravity bottle and by the hydrometer, and, unless the patient put water into the specimen (which was highly improbable), there was no other source of error. On questioning the patient, he stated that on the day upon which the specimen of urine was passed, his thirst was so great that he drank water incessantly. He believed that he must have swallowed a gallon and a half during the day.—*Lancet*, Nov. 13, 1880, p. 766.



# SURGERY.

---

## DISEASES OF THE BONES, JOINTS, ETC.

---

### 28.—AN IMPROVED METHOD FOR EXCISING THE WRIST-JOINT.

By W. ROGER WILLIAMS, Esq., L.R.C.P.L., M.R.C.S.E., late House-Surgeon, Royal Albert Edward Infirmary, Wigan.

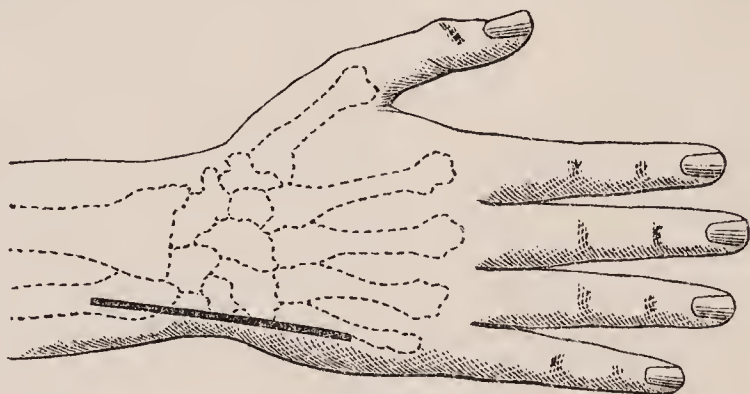
It is not so long since Malgaigne wrote of excision of the wrist joint, "*une opération déplorable, et qu'il est temps de rayer absolument de la pratique.*" But all this has changed now—thanks to the labours of Mr. Lister,—and the great advantages to be derived from the operation are generally recognised. Yet it is seldom performed. This, I believe, is mainly due to the complicated procedure usually adopted. "It has," says Liston, in the introduction to his work on Practical Surgery, "been well and truly remarked by the celebrated Desault, that the simplicity of an operation is the measure of its perfection." In endeavouring to carry out this injunction I have planned an operation by which the dorsal incision is altogether dispensed with, and the tendons are separated with less disturbance than was formerly possible—advantages, as I think, of considerable importance, since the large wound in the midst of the tendons is thus avoided, and consequently no cicatrix is left to which the adjacent parts become matted, as so often happens after the operations of Lister and Langenbeck. Another point on which I lay great stress is the preservation of the trapezium. The subsequent utility of the thumb, and indeed of the whole hand, is greatly enhanced by this.

Whatever proceeding may be adopted, the removal of this bone is always a matter of some difficulty; and experiments on the dead body have convinced me that the radial artery seldom escapes division. It has been usual to describe the intercarpal synovial membrane as common to all the carpal bones except the pisiform, and this has led to the idea that in disease all the bones must be pretty equally affected. But according to M. Tillaux the intercarpal synovial membrane consists of three separate sacs; and the trapezium is connected with only one of these—viz., that one which is chiefly special to the articulation of the scaphoid with the trapezium and trapezoid. It is hardly necessary to mention that the synovial

membrane between the trapezium and the first metacarpal bone is special to that joint.

Thus there is reason to believe that a careful examination of cases suitable for excision will show that the trapezium is less frequently diseased than might be expected. In all cases an endeavour should be made to ascertain its condition before commencing the operation; and if diseased the gouge should be used.

To commence the operation the hand should be placed prone. In this position it is easy to make out the following landmarks:—The inner border of the fifth metacarpal bone, which is immediately external to the projecting mass of the muscles of the little finger; following this upwards we come to a small, but perfectly obvious, projection, due to the apex of the cuneiform; still higher up is the much larger prominence of the head of the ulna, and a little in front of this is its styloid process. Speaking in general terms, the incision may be said to pass along the back of the wrist near its inner border (see Fig.). The point of the knife is entered over the tendon of the extensor carpi ulnaris, at a short distance above the head of the ulna.



The incision is prolonged downwards between the head and styloid process of the bone, over the apex of the cuneiform, and thence along the inner border of the fifth metacarpal bone, at the middle of which it ends. In the upper part of the wound the tendon of the extensor carpi ulnaris must be laid bare, at its middle the pisiform is to be disarticulated, and in its lower part the opponens minimi digiti should be detached from the metacarpal bone. The extensor carpi ulnaris tendon is now to be separated from the base of the metacarpal bone, and to be freed from the ulna as far as may be necessary. The articular surfaces of the ulna and the fifth metacarpal bone are then to be sawn off. The next step is to cut off the unciform process with the bone forceps. It is then easy to raise the soft parts from the front of the wrist, with scarcely any injury to the synovial sheaths. The tendon of the flexor carpi radialis lying in the groove of the trapezium is not to be disturbed. The articular surfaces of the three middle metacarpal bones are now to be cut off; and the trapezium must be



separated from the trapezoid and scaphoid. The latter part of the proceeding may be done most conveniently by introducing the blades of the bone forceps between the first and second metacarpal bones, and cutting upwards towards the outer part of the lower end of the radius. The soft parts being held up by the copper spatula, a small jaw saw—one with a strong back, the breadth of whose blade does not quite equal the thickness of the lower end of the radius—should then be applied to the front of this part of the bone, just above its articular surface. The section is not to be quite complete: the dorsal lamina should be broken through. A few touches with the knife suffice to separate the detached extremity from the dorsal tendons, with scarcely any injury to these. There is nothing now to prevent the removal of the excised bones.

Of course, if the parts are much altered by the disease, it will often happen that a more irregular proceeding will be adopted.

The trapezium, pisiform, and the unciform process should be left alone unless they are diseased.

The after-treatment is that recommended by Mr. Lister; and the parts divided are the same as in his operation.—*Lancet*, Dec. 11, 1880, p. 932.

---

## 29.—ON THE TREATMENT OF CLUB-FOOT.

By Dr. J. CRAWFORD RENTON, Extra Assistant-Surgeon to the Western Infirmary, Glasgow.

In the British Medical Journal for March 13, 1875, Dr. George Buchanan, Professor of Clinical Surgery in the University of Glasgow, recommends the following procedure in the treatment of talipes varus:—After division of the tendo Achillis, he says—"The next stage is the division of those structures which maintain the incurvation of the astragalo-scaphoid joint, and which pull the ball of the great toe towards the heel. To effect this, the tenotomy knife is to be entered at the inner edge of the foot just behind the tuberosity of the scaphoid bone. It is to be kept flat and pushed under the skin till it reaches to the middle of the sole; then it is to be turned with its edge to the plantar fascia, which is to be divided with a sawing movement of the knife, the parts being kept in extreme tension by an assistant. When the knife has passed through this part of the fascia, the point is to be dipped down so as to divide as far as possible the septum of fascia between the abductor pollicis and the flexor brevis digitorum, and then the whole of the muscular substance, down to the tuberosity of the scaphoid, is to be cut through; and before removing the knife from the aperture of entrance, the point may again be depressed, and the tendon of

the tibialis posticus divided proximately to its insertion into the scaphoid."

In eight cases of talipes and equino-varus, after dividing the tendo Achillis, I have adopted the above treatment with most satisfactory results. In the first two cases a little difficulty was experienced in rectifying the deformity, this was evidently due to my not having effected a thoroughly free division of all the resisting structures which Dr. Buchanan so plainly recommends. In the subsequent six cases the directions were more carefully carried out, with the best result, and in none was there any inconvenience experienced either in the way of hemorrhage or irritation of any kind.

The form of splint used was for the first two months that recommended by Dr. Heron Watson, which consists of two pieces of tin, one being moulded to the calf of the leg, and the other to the sole of the foot, and connected by a metal rod. The foot piece of this splint can thus be bent to any angle, and the limb is bandaged to it daily, after careful manipulation of the muscles; the angle is gradually increased until the foot is in good position. This splint is easily obtained for a few shillings, and can be applied by the mother or nurse of the child after one or two lessons.

At the end of two months, the sandal, as used by Dr. Banks, of Liverpool, was employed, and it has likewise the advantage of being non-expensive. It consists of two pieces of leather, each provided with two metal rings, one piece is fastened round the foot, the other is fixed immediately above the knee-joint, the rings in each case being to the outside; passing between them are one or two india-rubber muscles which are hooked into the rings. If the child is fat, and the thigh piece seems inclined to slip, this may be remedied by attaching to its upper and outer side a narrow strap of leather, which is fastened above to the stays. By means of this apparatus the child is able to use all his muscles, and the weakened peronei are assisted in their action by the india-rubber muscles which are applied sufficiently tight to evert the foot. When the child is able to walk, the foot piece rings are sewed on the outer side of a lacing boot, and the artificial muscles continue to assist the child in progression.—*Glasgow Medical Journal*, Jan. 1881, p. 15.

### 30.—ON THE TREATMENT OF GENU VALGUM BY CONDYL- LOTOMY WITH THE CHISEL.

By R. L. SWAN, Esq., Fellow and Member of Surgical Court  
of Examiners, R.C.S.I.; Surgeon to the Dublin  
Orthopædic Hospital.

I do not here mean to discuss the relative merits of different



methods for the cure of genu valgum, nor do I advocate operative interference in any but severe cases ; the milder ones may, I think, be reserved for splints, with or without tenotomy. I shall, however, briefly give the reasons which led me to prefer and practice the plan above denominated.

Viewing the altered mechanical relations of the parts, the section proposed has always seemed to me the most rational means for their rectification. My attention was especially directed to the subject by the report of a case by Mr. Annandale, given in Braithwaite's *Retrospect*, in the second volume of 1875, which may be regarded as a severe method of obtaining the same result.

I exclude the consideration of the many other operative expedients, which, although they appear to have been more or less successful in the hands of the surgeons who adopted them, are not, I think, likely to be generally practised.

The development of the idea of rectifying genu valgum by a separation of the inner condyle, has resulted in its section by the saw (Mr. Ogston's) or by the chisel (Mr. Reeves') operation.

I have adopted the latter plan, although the success which has been attained by many surgeons in the performance of Mr. Ogston's operation has seemed to prove that what in my estimation were objections were practically harmless. I shall briefly state those objections. The first and chief of them was the mechanical lesion of the knee-joint. It seems to me impossible to separate the condyle by any saw with the same harmlessness to the articulation as by a sharp chisel. I may here state that one of the strongest reasons (but of which I now doubt the validity) which induced me to select Mr. Reeves' method was the term extra-articular, which its originator applied to it. Remembering the impressions I received while a student in reference to perforating wounds of the knee-joint, I could not fail to be attracted by the statement that this cavity was left unopened. I am disposed to think that in most of my own cases the joint was perforated by the chisel, and that the subsequent disruption of the condyle would produce a fracture opening into the joint. It is easy, however, to conceive that the synovial membrane and other intra-articular structures would more easily escape injury than if the point of a saw were repeatedly protruded into the cavity. The laceration of the soft parts which a saw would be likely to produce during its operation, and the increased liability to suppuration in the wound, seemed undesirable. The detritus from the saw, if propelled into the joint, especially appeared to me to be likely to act as foreign matter. I may here mention that I have seen considerable effusion into the knee-joint, and subsequent continued pain and inability to use the limb, in two

cases which I have had an opportunity of observing after the performance of Ogston's operation. No such symptoms have supervened in any of the twenty cases in which I have operated by the other method. In a letter from Mr. Reeves to me on the subject, dated October 16, 1880, he states:—"I have operated on seventy-one cases by my method of extra-articular condylotomy. Of these thirty-five were double, and in most of those both knees were operated on simultaneously. The cases were put up in plaster-of-Paris for a week or ten days, and then the patients can semiflex of their own accord, and passive motion is resorted to daily. Listerism was only employed by me in three cases (early ones), as it is not necessary. I *have* entered the joint in adults, but without the least disadvantage as regards the permanent results. In three cases there was temporary effusion, which rapidly disappeared. I have never known any subsequent joint trouble, and all the cases I have seen some time after the operation had perfectly straight and strong limbs, and no relapse. No instruments were necessary."

The method which I have adopted in this operation differs from Mr. Reeves' insomuch as I have always (as far as lay in my power) rigidly adopted Listerism, both at first and in the subsequent dressings, and I have not put up the limb in plaster, but used a straight outside splint, and dressed the wound daily.

I have not (up to this time) operated on any case over eight years old, and have never found it necessary to use the mallet. The chisel is the original instrument used by Mr. Reeves. One manufactured for me by Mr. Corcoran, Bachelor's-walk, I found preferable, inasmuch as it affords a better grasp, is wider in the cutting edge, and, becoming thickened about half an inch from the edge, acts powerfully as a lever to detach the condyle.

The following are the steps of the operation:—Having anæsthetised the patient and applied an Esmarch's bandage, flex the knee, and map out the condyle for division, by a line sufficiently oblique to allow of the process easily gliding upward on its section. This line will nearly correspond to the junction of the inferior fifth of the femur with the inner margin of the ligamentum patellæ, extending into the sulcus between the condyles, and external to the nipple-like elongation of the internal condyle. Having cut down with a scalpel on the internal condyloid ridge at the point indicated, the limb is laid on the outer side on a hard cushion, and the chisel introduced with the necessary degree of obliquity. Having done so, the handle of the instrument is firmly grasped, and, by a sawing movement, pressed onward in the defined direction. Having passed the



chisel as far as may be considered necessary, it is not withdrawn, but is impelled anteriorly and posteriorly in the same manner, so as almost to separate the condyle, the detachment of which is completed by using the chisel as a lever, the fulcrum being the shaft of the femur. The limb is now forcibly straightened, and the inner condyle may be felt to glide upward until on the same plane as the outer process, its progress being limited by the attachment of the internal lateral ligament of the knee-joint, which was previously elongated. Sometimes the tendon of the biceps, a band of the fascia lata, or even the vastus externus, may resist the forcible straightening of the limb. A division of these structures should be made, which will give rise to no further complication. The wound should then be dressed, and a straight splint put on the outside of the limb. Any hemorrhage that may occur is readily arrested by pressure.—*Dublin Journal of Medical Science*, Dec. 1880, p. 465.

---

### 31.—TARSAL TUMOURS TREATED BY ELECTROLYSIS.

By Dr. JULIUS ALTHAUS, London.

On February 6, 1860, Mr. White Cooper sent a lady, aged thirty, to me, who suffered from tarsal tumours occupying nearly the whole of both upper eyelids, and which had become gradually developed during the last six months. They looked inflamed, were very disfiguring, and caused considerable annoyance by interfering with the proper action of the eyelids, which felt very heavy. Under these circumstances Mr. White Cooper recommended the removal of the growths by electrolysis. As the conjunctiva was involved by the tumour and was excessively sensitive, reflex action in the lid being very much increased, I thought it best to perform the operation under anæsthesia, and therefore procured the assistance of Mr. Clover, who put the lady very quickly under the influence of his anæsthetic mixture. I then applied both poles of the voltaic battery by means of my four-pointed electrolytic needle-conductors alternately to both tumours, so that each of them received the influence of the cathode and anode successively. Twenty cells of Becker-Muirhead's battery were used for ten minutes, after which the whole of the tumours, both inside and outside, appeared completely shrivelled up.

Not a drop of blood was lost at any stage of the operation, which was particularly remarkable when the subconjunctival portion of the tumour was acted upon, as this was highly vascular. The surface of the lids was covered by goldbeater's skin and flexile collodion. The patient recovered quickly from the influence of the anæsthetic, and went the same afternoon to her home in the country. She called upon me again on March 4,

about a month after the operation, when I was gratified to find that the success had been complete. The tumours had entirely vanished; no scar was visible anywhere, and no eversion of the lids had occurred. Both eyelids had, indeed, a perfectly normal appearance.

Tarsal tumour is a troublesome affection and does not yield to external applications, such as the red precipitate or iodide of potassium ointment; so that, if removal becomes necessary, free incisions have to be made which are generally accompanied by considerable bleeding. The adhesive inflammation which supervenes upon the operation has sometimes to be increased by touching the interior of the cysts with nitrate of silver; and if the tumour be situated near the margin of the eyelid and the punctum, there may be cicatricial shrinking after the operation, and eversion of the edge of the lid, with displacement of the punctum. All this makes the ordinary operation for tarsal tumour a somewhat formidable one; and electrolysis would therefore appear far preferable. The complete absence of bleeding in the latter procedure is a great advantage, as the operator sees much better what he is doing, and can regulate the action of the galvanic force with the greatest nicety. A single application appears to be sufficient for a cure, and there is no danger of cicatricial shrinking afterwards, provided the operation be properly performed. In a case where only the skin of the eyelid would be affected, I should not resort to anæsthesia, as then the pain would not be severe; but the great sensitiveness of the mucous membrane in the above case rendered anæsthesia desirable.—*Lancet*, Nov. 13, 1880, p. 767.

### 32.—ANTISEPTIC SURGERY UNDER PROF. ESMARCH.

By E. MUIRHEAD LITTLE, Esq.

At the conclusion of a visit to Kiel, where, thanks to the courtesy of Professor Esmarch and his assistants, I have been enabled to spend several hours daily in the hospital under their charge, it may not be uninteresting to the readers of the Medical Press and Circular to state briefly the result of my observations.

The most noticeable feature is the success achieved by Professor Esmarch under the system of infrequent antiseptic dressing, it being a by no means uncommon event for the first application to be left undisturbed for a month, and thus one of the objections to the antiseptic method, viz., its expense, is removed. In all cases the temperature is carefully watched, and the exterior of the dressings examined daily. On the slightest sign of discharge soaking through, or serious rise of temperature, the dressing is removed and re-applied.



The temperature of the patient is, as a rule, taken in the rectum, and hence some deduction must be made in comparing these cases with those in which it is taken in the axilla.

The antiseptic method of Lister, or a modification of it, is, wherever practicable, employed. In place of antiseptic gauze, large pads of carbolised jute (enclosed in antiseptic gauze), or of carbolised hydrophil cotton, which readily absorbs discharge, are used, with carbolised varnished paper over all, and starched gauze bandages: protective is not used. The bone drainage tubes invented by Prof. Esmarch's senior assistant, Dr. Neuber, are extensively used; and, indeed, without some such self-removing drain, the dressings could not, in resection and other cases, be left untouched for so long a time as they are left with its help. The tube is kept in its place by being simply transfixed at its outer end with a common safety pin; and when, after two or three weeks, the first dressings are removed, these pins are usually all that remains to show where the decalcified bone tube has been. The tubes, as used here, are quite soft and flexible, not brittle.

The solution of carbolic acid used for the spray is of the strength of one in forty, and it is not thought necessary to have the sprays playing immediately on the wound, but this latter is thoroughly and often washed out with carbolic acid lotion; and in the operating theatre, which is exceptionally well fitted up, two powerful sprays, worked by compressed air, conducted in pipes from the engine-house, are kept going, throwing the pulverised carbolic acid solution over the table and above the heads of the operators.

There is at present in the women's hospital a case of excision of the rectum for carcinoma, reaching some distance up, in which about ten inches of the bowel were removed, the peritoneum being necessarily opened, and the gut divided well above the morbid growth, and its upper portion brought down and fastened by sutures to the anus. Two drainage tubes were inserted into the peritoneal cavity, their ends protruding in the perineum, the one in front of, the other behind, the intestine. Antiseptic after-dressing could not be thoroughly carried out in this case, but although a week has elapsed since the operation, the temperature in the bowel has never exceeded 101·8 Fahr. The discharge from the wound is slight, and the patient is doing well. The arrangement of the bed for dressing this case is both simple and good. In another ward is an excision of the hip, operated eight days ago, doing very well. Also an excision of the knee, five weeks ago, very nearly well; this case has only been dressed twice since the operation. In the men's hospital I saw the first dressings removed from a patient who had been operated on for genu valgum, by removal of a wedge of bone,

six weeks ago. The wound was almost healed ; the discharge had been slight, and what faint smell the dressings might have was principally owing to the retained secretion of the skin. The bone drainage tubes had entirely disappeared. I saw another case re-dressed for the first time since the operation, in which a wedge of femur and tibia had been removed for bony ankylosis of the knee in a bad position, and the bones fastened together with catgut sutures. The wound had entirely healed, with the exception of one very small granulation at the site of a drainage tube. Four weeks had elapsed since the operation. There was no disagreeable smell in the dressings. Another case of excision of the knee was not dressed for four weeks, and the limb was then put up in silicate of soda, the wound being healed. A case of ex-articulation of the femur for severe necrosis of femur and tibia, with disease of the knee-joint in a man, was first re-dressed after fourteen days ; the stump was quite healed, and the patient is now nearly well. A very similar case of ex-articulation at the hip in a boy was also first dressed after fourteen days, and is now healed. An amputation of the leg, first re-dressed after fourteen days, was nearly healed at that time. I also saw another case re-dressed for the first time a fortnight after operation—that of a young woman in whom a large anchor-shaped incision, some eight inches in length, had been made in the neck, along the anterior margin of the trapezius, and a large mass of scrofulous glands removed. The wound was entirely healed, the catgut sutures having, as usual, disappeared.

Among the convalescents are the following:—A woman, now walking about, in whom eight inches of the rectum had been removed for carcinoma ; another, also walking about, in whom ovariectomy was performed fourteen days ago ; a boy who had had a large perityphlitic abscess opened in each groin, and in the rectum ; a case of ex-articulation of the lower jaw for epithelioma, the disease having spread to the dental nerve after a former operation. Another convalescent had a portion (1-3rd inch) of the second division of the fifth nerve removed for obstinate facial neuralgia. The nerve was reached in the spheno-maxillary fossa by dividing the zygomatic arch, and turning down it and the masseter muscle, the nerve being stretched before division. Operations on the infra-orbital, &c., performed in London and elsewhere, had failed to give relief ; the neuralgia has, as yet, not recurred.

I had the advantage of seeing the Professor operate on numerous patients—among others, for extensive necrosis of the tibia, tenotomy, radical cure of hernia by dissection ; removal of a large osteo-sarcoma in the temporal fossa, extending by the spheno-maxillary fissure into the orbit, and protruding the



eye. Stones were also shown, some whole and others in fragments, removed by Bigelow's operation at a two hours' sitting. The patient is entirely relieved.—*Medical Press and Circular*, Dec. 1, 1880, p. 451.

---

### 33.—ON THE CATGUT LIGATURE.

By Prof. JOSEPH LISTER, F.R.S., President of the Clinical Society of London.

The catgut ligature has in some respects exceeded my original hopes. I feared that its advantages would be limited to wounds in which putrefaction was avoided, and that if septic suppuration took place in a wound in which it was employed for securing the vessels, the ligatures would sooner or later come away like little sloughs. Such, however, has not proved to be the case. Whatever be the progress of the wound we, never see anything of the catgut, so that even surgeons who have not adopted strict antiseptic treatment have been led to employ the new material in ordinary wounds.

Catgut is to be had all over the world in abundance. It is beautifully strong and smooth; it is prepared of various sizes, admirably adapted for all the purposes of the surgeon, and is extremely cheap. Wholesale it is sold at 12s. per gross, that is to say, 1d. per hank. But as it comes from the maker it is entirely unfit for the purposes of the surgeon. However beautiful in the dry state, it becomes soft and pulpy soon after it has been placed in blood serum. In one of these glasses is a piece of unprepared catgut which was placed in warm serum this morning, from the blood of a cow, and within half an hour it was in the condition in which it is at the present time, swollen, soft, and pulpy. A knot tied upon it would hold as little or scarcely better than would one on a piece of the intestine from which the catgut is derived: an utterly unsatisfactory material, soft and slippery, the knot not holding in the least. It is essential in order to fit the catgut for the purposes of the surgeon that it be altered in its physical constitution so as to be no longer liable to this softening effect by the serum of the blood. It is a remarkable circumstance that the blood serum softens catgut more than even water does. It might have been expected *à priori* that a solution of a colloidal substance like albumen would have been much less disposed than water to permeate and soften an animal tissue like catgut; but it is otherwise, and therefore we cannot test the trustworthiness of catgut by steeping it in warm water, as I formerly used to do. In order to be sure that a given specimen of catgut will answer the purpose in so far as the knot is concerned, that it shall not slip, it is needful that we steep the catgut in blood serum, a somewhat

troublesome process, as it involves sending to a slaughter-house for blood.

The method of preparing catgut which I published long ago answers the purpose very well even for the ligature of arteries in their continuity, provided certain conditions in its preparation be complied with. Such at least is my own experience. This, indeed, has not been very extensive, but it has been sufficient to deserve consideration. I have tied altogether nine large arteries in their continuity with prepared catgut. Of these one was a case of ligature of the carotid in a young woman aged twenty-two, with a pulsating tumour below the angle of the jaw, in the situation of a carotid aneurism, and with all the symptoms of that disease. The application of the ligature reduced somewhat the pulsation and the dimensions of the swelling, but the further cure which we hoped for did not take place. She left the hospital with a pulsating tumour, and I heard only yesterday from the medical man under whose care she is in Scotland that this tumour, for which I tied the carotid artery in 1874, still exists as a pulsating swelling, if anything, rather on the increase. But though as regards the cure of the disease the ligature was unsatisfactory, nothing could be more beautiful in its effect as respects the healing of the wound without suppuration, and permanent obstruction of the artery at the seat of ligature.

As regards the mode of applying the ligature, I have always used a single reef knot, with short-cut ends, tying it sufficiently tightly to cause the giving way of the internal and middle coats. This latter point is not, indeed, essential; as I long ago surmised, and as Mr. Barwell's experience has demonstrated. But if, as in the case of catgut, the form of the ligature admits of it, the injury done to the deeper tunics is, I believe, advantageous, by leading to a salutary corroborative process of repair.

Why, it may naturally be asked, has my own experience been more satisfactory with the catgut ligature than that of many other surgeons? There are, I believe, two reasons for this: one is, that I have never ventured to tie an artery of considerable size in its continuity without having taken pains to ascertain that the catgut was of thoroughly trustworthy material; and the other reason is, that I have adopted strict antiseptic means of treatment, not only during the earlier stages of the case, but to the last. So long as any part of the wound remains unhealed, antiseptic treatment of the strictest kind ought, I believe, to be employed. Even though the sore may seem to be superficial, there may still exist a sinus leading down to the site of the ligature, and if ordinary treatment, as distinguished from antiseptic, be employed, down this sinus the septic process may advance and invade the ligature, and, induc-



ing unhealthy suppuration and ulceration, may lead at last to disaster from hemorrhage. I know that this has actually taken place.

But although the catgut prepared after the old method answers very well if it be of proper quality, there is this great objection to this method that it requires a long time in order to produce the requisite quality. At least two months are needed to make the ligature at all trustworthy. It is better at the end of six months, and still better at the end of a year. I possess catgut prepared in this way twelve years old. I have brought here a sample of such catgut which has been steeping in warm blood serum since this morning, and it will be seen that it remains translucent and is comparatively firm, instead of being opaque and soft like the unprepared catgut in the same serum.

The length of time that it requires is, therefore, an exceedingly serious objection to the present method of preparation; and one great object which I have had in view to a series of experiments on this subject with a view to improving the preparation of the catgut ligature has been to devise a means, if possible, of preparation with a short time. These experiments—it may seem almost ludicrous to say so—have occupied two years of my leisure time in the past, some time ago, and after being interrupted by an accidental circumstance, have been continued in a more desultory manner since; but at length I have felt myself justified in bringing before you a new mode of preparation by which the catgut can be prepared in a short period, and at the same time in a perfectly trustworthy condition.

But before I allude to these experiments, which I must endeavour to do in a short compass—I should weary you if I were to bring a large proportion of my facts before you, though I may say out of the hundreds of experiments I have performed on the subject I have never performed one which has not added something to my knowledge of it—before referring to these experiments I wish to say a few words as to what catgut is. Catgut, as you are doubtless all aware, is prepared from the small intestine of the sheep. The gut is treated in what seems an exceedingly rude manner for so delicate a structure. It is scraped with some blunt instrument, such as the back of a knife, over a board; and by this means, as the people express it, the dirt is scraped out. That which these people call the dirt is the exquisite and complicated structure of the intestinal mucous membrane. But while the mucous membrane is scraped out from within there is also scraped off from without the circular coat of muscular fibres. The result

comes to be that the intestine is converted into a comparatively unsubstantial material, consisting of two parts or bands, one more slender than the other. When the mesentery is stripped off by the butcher, the peritoneal covering of the gut shrinks into a narrow strip; and this, with some longitudinal fibres, constitutes the more slender of the two parts to which the intestine is reduced by this process of scraping. The other part is the essential material from which the catgut is prepared, and this is neither more nor less than the submucous cellular coat of the intestine. When I first visited a catgut manufactory I was astonished to find that after this scraping process the intestine could be blown up still as a continuous tube, as you see can be done with this specimen, which has been treated in the manner I have described. This exquisitely delicate structure is a beautiful anatomical preparation of the submucous cellular tissue, though made in so rude a fashion. This coat of the intestine which, in the sheep, has this extraordinary toughness, is the material out of which the catgut is prepared. For what the manufacturer calls the "ones"—the thicker form of ordinary catgut—all that is done is to twist the entire tube by means of a wheel like a rope in a rope-walk, up to a considerable degree of tightness, and then allow it to dry. It is afterwards exposed to the fumes of burning sulphur, and for some more special purposes it is bleached by the action of potash. But the essential thing is the twisting and drying; it can be prepared without the use of sulphur, as well as without the use of potash. Some specimens which I have here are prepared by water only, without the use of any other ingredient. This exceedingly beautiful structure, as I think we must consider it, as fine as a horsehair, is prepared without any reagent whatever; nothing but the animal tissue twisted and dried. For the finer kinds the tube of the submucous coat is split up by means of razor blades more or less numerous, according to the degree of splitting required, connected with a conical piece of wood, which is pushed along the tube.

Such, then, is the material with which we have to deal. The first of the more recent experiments which I performed with reference to it was made with the view of ascertaining, if possible, what part the water played in the ingredients used for the preparation by our old method. If I steep unprepared catgut in a mixture of dry carbolic acid and oil, however long it be so steeped, although it will be, of course, abundantly aseptic, it remains utterly unfit for the purposes of the surgeon; a knot upon it would still slip in a wound. But if, instead of using carbolic acid in the crystallised state, we



use carbolic acid which has been liquefied by the addition of a little water, we get in course of time a properly prepared catgut. I wished to ascertain how much water was required. The carbolic acid would enable oil to dissolve a certain amount of water; would that amount of water be sufficient which carbolic acid enables oil to dissolve? Accordingly I prepared jars of carbolic oil, some containing the full amount of water we had used hitherto, some a smaller quantity, and some none at all, and placed in them portions of the same hank of catgut. In due time I proceeded to examine the result, by taking portions of gut and putting them into warm water, and leaving them for a certain time in order to ascertain how the knots would hold. To my great surprise I found that which had been steeping in the carbolic acid and oil without any water was just as good as that which was in the carbolic acid and oil with the water. This was contrary to distinct previous experience. Reflecting on the matter, I saw that the only possible explanation was that the catgut was already, so to speak, prepared before I put it into the liquid. Now it so happened that the catgut I had used was several years old; and it turned out that mere age of the catgut prepares it: that in proportion to its age it is rendered less liable to be softened by water or by blood serum, and a knot tied upon it will hold better. And thus I had, for the first time I believe, scientific evidence of the truth of what is popularly spoken of as the "seasoning" of various articles made of animal products. I asked a person who sold violin strings if there was any result from keeping the strings a long time. He said, No; the only result he knew was that they would probably get rotten. But it so happened just about that time there came an old fiddler to amuse the patients at the Royal Infirmary of Edinburgh at Christmas-time. The weather was wet, and he said that his fiddle would not work properly because the fiddle-strings were not properly seasoned. So that he was aware that fiddle-strings, which, of course, are catgut, are liable to seasoning, and require it. This was to me a very important fact, because it served to explain the success that I had had in my earlier experience with the catgut before I knew at all the proper mode of preparing it. I look back with horror at some of my early procedures with catgut. I have operated, for example, on an irreducible ventral hernia, opened the sac, divided the adhesions, returned the protruding intestines, stitched up the mouth of the sac with the catgut, and then applied stitches at considerable intervals in the skin. All went perfectly well; but the mode of preparation that I then used, if I had worked with catgut recently made, must have ended in utter disaster;

the knots must have slipped in a few hours, and the intestines must have been protruded through the wound.

I need hardly say that this mode of preparation, interesting though it is, would not be satisfactory; it would only have, in a more aggravated form, the inconvenience of the extremely long period which our old method requires; and, besides that, it by no means provides all the conditions that must be fulfilled in order to provide a perfectly satisfactory state of the catgut for surgical purposes. These conditions I will now mention. In the first place I have spoken of a short period of preparation. This is very desirable. Then it is essential that the catgut should have proper strength, so as to bear any reasonable strain that the human hands can put upon it in the thicker forms; as when used, for instance, in such cases as the circumferential ligature of the thyroid vessels, in the removal of a goitre, or for securing the pedicle in ovariectomy. And it is not sufficient that it should be strong to start with; it is easy to get catgut strong in the dry state; it is necessary that it should be strong after steeping in blood serum for a while. Take, for example, the case of tumour of the thyroid. I passed in that case six ligatures; and in a former case where the tumour was larger I thought it prudent to pass as many as eight, so as to subdivide more the mass that had to be tied; but it is not convenient to tie each of these ligatures as soon as it is passed; and the process of passing takes a considerable time. Now it would be a very sad thing if the residence of the catgut among the tissues soaked with serum for a few minutes, or even a quarter of an hour, should render the catgut so soft that it should give way when we put the strain of the hands upon it. That, then, is another point that is essential, if the material is to be useful for all the purposes for which it is desired. Then, again, it is necessary that a knot tied upon it should hold with absolute security, not merely in the first instance, but after soaking for an unlimited time in blood serum. It is further needful that it should not be too rigid; for, as we shall see immediately, it is possible for catgut to be over-prepared, in which case it may remain almost like a piece of wire among the tissues, and ultimately, perhaps, come away by suppuration in consequence of the mechanical irritation which it produces. But while the animal juices must be able to soften it sufficiently to render it mechanically unirritating, yet, on the other hand, it will not do for it to be too rapidly disposed of by absorption. If it is to do duty for the ligature of an artery in its continuity in the immediate vicinity of some large branch, it must remain for a considerable time of good strength, unabsorbed, and when it is at length absorbed it is desirable that it should be removed in



such a manner that while it is reduced in thickness it should still, as long as any of it remains, retain its tenacity.

Now these are a series of conditions which I assure you it is not easy to fulfil completely. I have in various experiments complied with some of them easily enough, but failed in others. Sometimes I have succeeded with all but one, and one has baffled me. I have used various materials in experiments, as you will naturally suppose. One substance that suggested itself was tannic acid, so as to convert the fibrous tissue of the catgut into leather. I succeeded well enough in some respects with tannic acid applied in different ways, but in one respect I did not succeed. I have not obtained by means of tannic acid a kind of catgut that is not too speedily absorbed. Even a piece of kid leather, cut into a suitable shape for sutures, and rendered aseptic, became too rapidly absorbed. Chromic acid was another agent which I very naturally tried on account of its well known effect in hardening tissues. Chromic acid alone does not work very well, but I found that the addition of some other substance to it aided its action very greatly. By adding, for instance, to the watery solution a little glycerine, which produces a reducing action on the chromic acid, we get a different sort of liquid, which acts much more energetically on the catgut. I was highly delighted with the results of the action of this mixture of chromic acid and glycerine; and just about this time it happened that Mr. Oliver Pemberton of Birmingham applied to me for a piece of catgut for the purpose of ligaturing the external iliac artery in a remarkable case of three aneurisms in one limb—two in the femoral, and one in the popliteal. I thought I could not do better than send him a piece of my recently prepared chromic catgut. I did so; and a month afterwards he wrote to me saying that nothing could be more satisfactory than the result. He had operated antiseptically; the wound had united by first intention, and so far as the case could go well, all had gone well. There was, indeed, gangrene of the lower part of the leg, which Mr. Pemberton had predicted would occur in consequence of the existence of four successive obstructions in the course of the arterial channel—viz., the ligature and three solid aneurisms; but the case, under proper management, was doing well. Four weeks later, however, Mr. Pemberton wrote to me again, telling me that soon after his last report the patient had begun to show signs of suppuration about the seat of the wound. After a while the abscess opened in the cicatrix, and one day the ligature which he had placed on the artery was found lying unaltered on the granulations. It is now on one of the cards before you—an over-prepared ligature, which had come away, rigid and wirelike, making its way out, as a piece of glass

might have done, by mechanical irritation. This opened my eyes for the first time to the possibility of having catgut over-prepared. This over-preparation by means of chromic acid is, I understand, to be found illustrated in a large German school at the present time. I have been told by an American physician, who has lately been in London after spending some time at that school, that the catgut ligatures come away from all wounds to which they are applied in that clinique. They count the ligatures as they put them on, and invariably see them all before the case is done with. The catgut has been over-prepared.

It is by means of chromic acid, however, that I have at length arrived at a result which appears to satisfy all our conditions. But before speaking of the new method I wish to say a few words more with regard to the old. To what is it that it owes its virtue? In this bottle is some catgut which has been nearly ten months in our old preparing liquid—namely, one part of carbolic acid which has been liquefied by means of water to five parts of olive oil. In this other vessel, again, we have catgut which has been the same length of time in a solution of carbolic acid in water. Water will only take up one-twentieth part of its weight of carbolic acid; but the effect produced upon the catgut by the watery solution is very much greater than that brought about by the four times stronger oily solution. In the former case, as you can see, the catgut is almost black—a sort of purple black—while the other is comparatively pale, very little altered from its original colour. This circumstance shows two things. In the first place, the effect of the watery solution of carbolic acid upon the catgut explains the efficacy of the water in our old method. It is the watery solution of carbolic acid in the liquid of the old method that is the effective agent. But while that is the case, when the watery solution is mixed with oil, the fact that it is so mixed limits and checks its operation. If catgut is kept in the watery solution only, there seems to be no limit to the degree of continuous preparation of the gut, so that it becomes more and more dark in colour, and more and more difficult of absorption by the tissues. It is otherwise when the watery solution is blended with the oil. Though the process does go on for many months, there comes a time when it comes to a standstill. You need not fear that catgut prepared by the old plan is ever over-prepared. There is a specimen on the table which at the end of twelve years is as limp, after steeping in blood serum, as it would have been at the end of a single year. Therefore, we possess in the carbolic oil a means of checking any mode of preparation that we may adopt, keeping it from that time forward not materially further prepared, while at the same time



the large proportion of the carbolic acid to the oil (one to five) ensures the catgut being maintained perfectly aseptic.

The method of preparation which I have now the honour to bring before you is the following: I dissolve one part of chromic acid in 4000 parts of distilled water, and add to the solution 200 parts of pure carbolic acid, or absolute phenol. In other words, I use a one-to-twenty watery solution of carbolic acid, only that the carbolic acid is dissolved not in pure water, but in an exceedingly dilute solution of chromic acid. But minute as is the quantity of the chromic acid, it exerts, when in conjunction with carbolic acid, a most powerful effect upon the gut. The first effect of the addition of the carbolic acid to the chromic solution is to change its pale yellow colour to a rich golden tint. But if the liquid is allowed to stand without the introduction of the catgut, it changes in the course of a few hours to a dingy reddish-brown, in consequence of some mutual reaction of the two acids, and a considerable amount of grey precipitate is formed. If, however, catgut about equal in weight to the carbolic acid is added as soon as the ingredients are mixed, the liquid retains its brightness, and the only change observed is a gradual diminution of the depth of the yellow colour; the precipitate, which I presume still occurs, taking place into the substance of the catgut. As soon, therefore, as the preparing liquid has been made, catgut equal in weight to the phenol is introduced into it. If you have too large a proportion of catgut, it will not be sufficiently prepared; if you have too small a quantity, it may run the risk of being over-prepared. At the end of forty-eight hours catgut steeped in such a solution is sufficiently prepared. It is then taken out of the solution, and dried, and when dry is placed in one-to-five carbolic oil; it is then fit for use. I have here a sample of catgut prepared by this method. Although it has been steeped in warm blood serum since this morning at 11 o'clock, it is still translucent and firm, without being rigid, and a reef knot tied upon it holds with the most perfect security.

The strength of the catgut depends upon different circumstances. In the first place, sheep differ as to the strength of their intestines, and the catgut-maker, if he understands his business, will insist upon having his raw material of the proper kind. In the next place, the intestines must not be allowed to putrefy; they must be taken fresh. For these things you must, of course, rely upon the maker of the catgut. In the next place, the liquid causes a certain amount of softening of the catgut, and if it is introduced in loose hanks, this will tend to produce a little uncoiling of the twisted cord, and a still greater degree of uncoiling will take place during drying. It is of very great importance that this should not occur, because it

involves weakening of the thread, and that in different degrees in different parts, and this may lead to the gut giving way when you subject it to a strain. The catgut, then, should be prepared on the stretch, both when it is put to soak and when it is put to dry.

I need not enter into the mode in which this can be done by the manufacturer. I may only say this, that the surgeon who wishes to prepare it himself may do it in different ways. For instance, he may take two large test-tubes, one a little larger than the other, and he may wind the catgut on the smaller tube, fixing one end by sealing-wax, winding it round, and then bringing it up again, and fixing the other end with sealing-wax at a higher level than the liquid will come to, putting sufficient liquid into the larger test-tube, and introducing the smaller test-tube with the catgut wound round it, with a little shot to keep it down in the liquid. After forty-eight hours he takes out the smaller test-tube and leaves it till the catgut is completely dry. I merely mention this as an illustration, and also as furnishing a hint to some surgeons in private practice who may desire to prepare the catgut themselves. Or a couple of gallipots, one larger than the other, will do just as well. But, as I have already said, the principal uncoiling takes place during drying, and for all ordinary purposes a sufficiently good article is got by putting the catgut loose into the liquid, and putting it to dry on the stretch, by tying the ends of each hank to two fixed points in a room.

In the dry state, catgut prepared by this method is as strong as need be. As to strength in the condition after steeping in blood serum, I confess it is only this very day that I have obtained evidence that catgut thus prepared is really all that we can desire in that respect. The catgut of the hank from which this specimen was taken measured in the dry state  $2\frac{2}{3}$  hundredths of an inch in diameter, and broke at 13 lb. 6 oz. I have found by experiment that 10 lb. is the utmost strain that my arms are able to put upon a cord. 13 lb. 6 oz., then, is amply sufficient; while, at the same time, the catgut is not at all too large for going into the eye of an aneurism needle. Having obtained the other day some fresh blood of a cow from the slaughter-house, I took some of the serum to-day and put two pieces of this same hank of catgut in the serum, and I placed it in a stoppered bottle in a warm box, at a temperature of 98° F. After more than half an hour I tested the breaking strain (I must not stop to explain how that is done), and I found that the breaking strain of the same catgut, which in the dry state had broken at 13 lb. 6 oz., was 11 lb. 4 oz.; that is, though suppld by the serum, it had only lost in strength 2 lb. out of 13 lb. I think that is really all that can be desired.



The only remaining condition to be considered regarding the new catgut is its suitable behaviour among the tissues. Before describing this I wish to say a few words regarding the manner in which catgut is absorbed. It has been said of late by various persons that the catgut is dissolved by the serum. I must confess that this is entirely contrary to my own experience. I have already said that in order to test the quality of catgut you must have it steeped in blood serum. I have tested in this manner catgut prepared in various ways. The serum has sometimes been putrid; sometimes it had no smell at all, and sometimes it had a little odour. The serum has been kept about the temperature of the body, but I have never seen the slightest indication of any chemical solution of the catgut. Then, again, as to the behaviour of the catgut in the body. Suppose we use it as a stitch, if the catgut were disposed of as a matter of chemical solution, we should expect that when it is employed as a suture, and a piece of our protective is put over it, which is always kept moist with serum perpetually oozing from the wound, the outer parts of the stitch, the parts outside the skin, as well as the parts among the tissues, would show signs of diminution. It is never so. The diminution is always absolutely limited to the parts within the tissues. It is still more striking, as was suggested to me by Mr. Cheyne, to consider the case of catgut used as a drain. There its very function is to drain out the serum, and it is perpetually washed with it. You might suppose that a stitch might perhaps get a little dry. Here there can be no mistake, the serum from the wound is perpetually flowing over the gut, yet, as in the other case, we find the diminution of the catgut is absolutely limited to the part within the tissues. This seems to me sufficient evidence that it is not a question of the mere chemical solution of the catgut, but of the disposal of the catgut in some way or other by the living textures.

Now, if we examine catgut in the process of diminution we find that it may be affected in one of two ways. If it has not been properly prepared, the substance of the catgut becomes converted in the course of a very days into a soft pultaceous mass, which, when we examine it by a microscope, we see consists of the remains of the old cellular tissue of the submucous coat, with the interstices among these fibres filled with cells of new formation. The catgut tissue is infiltrated with young growing cells, and it is obvious it is this infiltration which is the cause of the softening. But, on the other hand, if the catgut is properly prepared, instead of being infiltrated by the cells of new formation, it is only superficially eroded. I have here a pretty example of catgut prepared by the new method which has been served in that way by the tissues. You will see that at

the part which was among the tissues there remains a very slender residue of the catgut, all the rest having gone; but that slender residue continued firm and translucent, still retaining its firmness, showing not even a superficial infiltration—in short, having exactly the characters that we desire for catgut required for the ligature of an artery in its continuity—viz., that till the last, even though reduced in dimensions, it shall retain its firmness and its tenacity. We know that antiseptic treatment has shown that a piece of dead bone may be absorbed provided it be not putrid; the granulations that overlap it superficially may, so to speak, erode it. It is not necessary for us now to consider how that is effected, but certainly in some way or other the granulations do what mere steeping in serum, whether putrid or non-putrid, never would do. Never, I believe, would the bone be dissolved by the serum. And just as a non-putrid sequestrum is served by the tissues, so is a well-prepared specimen of catgut—it is superficially eroded. I have here a stitch that I removed to-day from a wound made ten days ago—a wound made for stretching the anterior crural nerve, which was stretched as well as the sciatic in an aggravated case of sciatica—and you may see that as yet it shows no signs of erosion. We know by experience that if it were left three or four more days we should find it probably eroded, as the former specimen shows; but until nearly a fortnight has elapsed erosion does not begin. It proceeds gradually, and the thicker the catgut the slower does it proceed. We may fairly consider that from a fortnight to three weeks is long enough for the persistence of a ligature upon an artery in its continuity. [Three days later I removed two remaining stitches in the case last referred to, and found both of them slightly eroded superficially.]

I have brought with me the carotid artery of the calf in which I first established the fact of the substitution of new living tissue for the dead old tissue of the catgut. If any gentleman will examine the specimen after the meeting he will see the ligatures of new formation incorporated with the external cellular coat of the artery. I have been strangely misunderstood as having intended to convey the idea that the catgut when it becomes organised, comes to life again. Gentlemen, such an absurd notion certainly never entered into my head, any more than, when I have spoken of the organisation of a blood-clot, I have meant by that expression to convey the idea that the blood-clot becomes organised by its own inherent virtue. I found the term “organisation” ready to my hand; it was no term of my invention. It was used with reference to lymph. Now, pathologists in speaking of lymph as becoming organised, did not, I suspect, mean by the expression to imply that it was



the lymph substance that had the power of self-organisation as distinguished from any influence that surrounding tissues might exert upon it. So in the same way the expression "vascularisation of lymph," was used when it was universally believed by pathologists that the bloodvessels were formed only by loops from pre-existing bloodvessels. Nowadays, a different view may be taken, but the term "vascularisation of lymph" was employed without any notion that the lymph itself created the bloodvessels. And so when I spoke of the organisation of the blood-clot, or of catgut, I never meant to convey the idea that either the one or the other did the work itself. As to the blood-clot, we know that if it remains free from putrefaction among the tissues, it speedily becomes infiltrated with cells of new formation. Whether the white corpuscles originally present in the clot take any part in the formation of these new cells is a question now under discussion, and one, I conceive, not at all prejudiced by the use of the term "organisation of the blood-clot." With regard to catgut, I think if gentlemen would refer to my original paper in the *Lancet* they would see that I stated very explicitly that new tissue forms at the expense of the old, that the old tissue is absorbed by the new, and that, as the old is absorbed, new is put down in its place.

In conclusion, I venture to recommend the new chromic gut as in all respects deserving of your confidence; and at the same time to thank you sincerely for the patient attention with which you have listened to this long address.

[In a letter to the Editor of the *Lancet*, who had expressed a desire for further evidence as to the persistent strength of the new chromic gut after steeping in warm serum, the time during which it had been tested having been little more than half an hour, Prof. Lister says:]

The serum which I employed being derived from blood taken from a cow with antiseptic precautions, and being still perfectly sweet, I have made some further experiments, in accordance with your suggestion. I first tried the specimen of gut twelve years old, prepared by the old method, a portion of which I exhibited at the meeting steeped in serum. It is comparatively slender gut, having little more than half the thickness of the chromic gut with which I before experimented, the average diameter being  $1\frac{2}{3}$  hundredths of an inch. Two trials of it in the dry state gave 5 lb. 9 oz. as the average breaking strain, and two other pieces, after steeping half an hour in the warm serum, broke at 3 lb. 14 oz. In other words, this especially well-seasoned sample of what the old method could provide was deprived by warm serum of about one-third of its strength in half an hour.

It may be worth while to describe the manner in which the

strength of the gut was tested in these experiments. A piece of steel of horse-shoe form is suspended by a ring on the middle of its convexity, so that the horns of the horseshoe are dependent, these horns being perforated for the reception of a cylindrical bolt of steel, which thus lies horizontally, and can be removed at pleasure. A piece of the catgut having been tied in a double reef knot, the bolt is partially withdrawn and readjusted after the noose of the catgut has been slipped over it. Into the lower part of the catgut ring thus suspended is passed the upper end of a pot-hook, to the lower part of which are attached weights approaching what the catgut is likely to bear, and also an empty bag, into which shot is poured till the cord gives way. The shot is weighed, and the result, added to the other weights, gives double the breaking strain of the gut. For as the cylindrical bolt works with perfect smoothness in its bed, it adjusts itself so as to prevent inequality of strain in the two sides of the catgut ring, which thus take an exactly equal share in sustaining the weight.

I next tested a piece of gut prepared three months ago by the new method, similar in thickness to the other—viz., having an average diameter of  $1\frac{2}{3}$  hundredths of an inch. Four trials with it in the dry state gave an average breaking strain of 6 lb. 15 oz. I then placed in the warm serum three other pieces of the same hank, after measuring their diameters. One of these pieces, with diameter  $1\frac{2}{3}$  hundredths of an inch, tested after it had been one hour in the serum, broke at a strain of 5 lb. 13 oz. Another piece, which when dry measured decidedly less in diameter than the first, was tried after being fourteen hours and a half in the serum, when it also broke at 5 lb. 13 oz. A third piece, just  $1\frac{2}{3}$  hundredths of an inch in diameter when dry, was left in the warm serum for twenty-four hours, at the end of which time it showed a breaking strain of 5 lb.  $10\frac{1}{2}$  oz. Thus the new gut continued as strong at the end of a day in the serum as it had been after the lapse of an hour, and lost in the serum only about one-seventh of its full strength in the dry state, a result corresponding very closely with that obtained in the former experiment with the thicker chromic gut after forty minutes' immersion. At the same time, the new gut being considerably stronger to start with than that prepared by the old method, its strength, after steeping for twenty-four hours in warm serum, was greater than that of the old kind in the dry state.

I felt pretty sure beforehand that the new gut would thus persistently retain its strength in the serum, because in numerous experiments which I had made as to its quality after immersion in that liquid, I had observed not only the holding power of a knot tied upon it, but also its consistence, and I had



found it as firm after the lapse of two days as after a couple of hours. But in reality it is only for the tightening up of the knot that great strength of the catgut is required ; and, having ascertained that the new gut was little impaired in resisting power by steeping in warm serum for as long a time as was ever likely to intervene between the passing of a thread by the surgeon and the tying of the knot, I felt I had all the evidence that I desired. For it has never happened, so far as I am aware, that a ligature of catgut, when once the knot has been secured, has proved treacherous in the way of rupture of the cord. When mishap has followed its use, it has been either from slipping of the knot, from premature softening and absorption of the substance of the catgut, or, last not least, from putrefaction having been allowed to take place in the wound.

I am not surprised you should have seen an apparent inconsistency in the idea that micrococci, which are harmless in ordinary wounds treated antiseptically, should have been the cause of the separation of the hempen ligatures by suppuration in the case of thyroid tumour. I may therefore, perhaps, be allowed to say in explanation that the difference in effect between the micrococci developing indefinitely in the interstices of the thick hempen threads and the same organisms on the surface of an organising blood-clot washed perpetually by serous discharge and occasionally by antiseptic lotions, seems analogous to the unhealthy ulceration occasioned by water-dressing left unchanged for several days, as compared with kindly healing under the same application daily renewed. The organisms present in the water-dressing are probably the same in both cases, but the longer duration of their fermentative agency gives rise to greater acidity of the products.—*Lancet*, Feb. 5, 12, 1881, p. 201, 275.

---

#### 34.—ON SALICYLIC SILK AS A SURGICAL DRESSING.

By A. F. MCGILL, Esq., F.R.C.S., Surgeon to the  
Leeds Public Dispensary.

The time has now passed when it is either necessary or expedient to discuss the antiseptic treatment of wounds. The success of the treatment is generally admitted by those surgeons who have given it a fair trial, and many are only deterred from using the Lister dressing by the supposed extra trouble which it entails. Any plan, therefore, which we can adopt whereby the practice may be simplified while the principle remains unaffected cannot but aid in leading to the more general adoption of antiseptic surgery.

When a wound of considerable size is dressed antiseptically

in the usual manner with carbolic gauze, the dressing must of necessity be changed several times during the first week. If this is not done, the serous discharge, which exudes in large quantity, soaks to the outside. Putrefactive changes ensue, and the case, as it is generally called, "breaks down." The frequent changing of the dressing in the early days after the infliction of a wound, during the time that healing by first intention may be expected, is an unmixed evil. It is probably owing to this cause that immediate healing of wounds treated antiseptically is not of more frequent occurrence. The handling of a wound at a later period when primary adhesions have become firm, or when granulation has occurred, is a matter of little moment. Unfortunately it happens that disturbance is necessitated at the very time when rest is most imperatively needed. If, then, we can use as a dressing some material which will not require to be renewed except at long intervals, we not only increase the patient's chance of a speedy recovery, but lessen very considerably the work and expense of the surgeon. Such a material is, I think, found in salicylic silk. The silk used is the article called in the trade "silk noils." These noils are a waste product, and are consequently of comparatively small value; they are sold for stuffing cushions and chair bottoms. The silk is soaked in a solution of salicylic acid, made by dissolving the acid in methylated spirit and boiling water. After soaking and drying ten parts of the silk should weigh eleven; consequently the silk when ready for use contains 10 per cent. of the acid. Before using it is advisable to tease the fibres asunder; though this is not absolutely necessary, it considerably improves the dressing, making it softer and more absorbent. At the same time its bulk is much increased, and consequently a smaller quantity is required for a dressing. When the silk is adopted as a dressing no antiseptic precautions should be neglected, the carbolic-acid spray and lotion being used in the usual manner. For drainage in large operations I have been in the habit of using the ordinary india-rubber tubes, either wholly or partially removing them at the end of the first week; in smaller wounds, tubes of decalcified bone, catgut threads or fiddle strings, prepared antiseptically and twisted into a spiral, have been inserted. These last, which are in suitable cases very efficacious, were first suggested and made by my friend Mr. G. D. Todd, a former house-surgeon at the Leeds Public Dispensary; being made of an absorbent material, they possess the advantage that they do not require any change of dressing for the purpose of removal. All absorbent tubes have, however, a common fault—they are not efficient in cases where they are exposed to the pressure of heavy flaps, as any considerable pressure causes them to collapse prematurely. The



dressing is usually applied direct to the wound; in some cases where there has been a long incision, a strip of thin muslin or gauze soaked in carbolic lotion has been first applied, covering all the wound except the points where the drainage-tube has presented; over this, silk in large quantities has been lightly bandaged. Wherever the silk has touched the wound it has been usual to dip a small portion in carbolic lotion before applying it. This has been done in deference to Professor Lister's teaching—to destroy any putrefactive germs which might alight with impunity on the non-volatile salicylic acid; but, as any liquid which reaches the germ would at the same time reach and dissolve the acid, it seems improbable that any putrefactive changes would result if this precaution were neglected.

The first dressing applied as directed above is not disturbed for from five to ten days, unless the condition of the patient necessitates an examination of the wound. If the temperature remains above 100° Fahr. it is probable that drainage is interfered with, and an examination of the wound is called for. If, however, proper care has been taken at the first dressing, such an examination will rarely have to take place. The second dressing may be left on for an indefinite time, and will not usually be removed till the wound is entirely or almost entirely healed. I need hardly add that all dressings are changed under the spray. The following cases are fairly typical of many others which have occurred in my practice.

*Amputation of Leg.*—A woman, aged fifty-seven, had suffered from an ulcer of the left leg for many years; the ulcer extended all round the limb; it had been healed on several occasions, but the cicatrix always broke down a few weeks after leaving bed. The patient was a flat, flabby woman, who had partaken freely of spirits. I amputated below the knee, making a long posterior flap; two large india-rubber drainage-tubes were inserted, the limb was covered with salicylic silk, and bandaged on to a piece of Gouche's splinting. On the sixth day the dressing was removed. On the fifteenth day the stump was again examined, and found entirely healed. The patient's temperature reached 99·2° on the second day, but was never afterwards as high as 99°.

*Removal of Mamma.*—The patient, aged fifty-one, was suffering from a scirrhus of the left breast, accompanied by enlargement of the lymphatic glands in the axilla. The breast was of large size, and the operation an extensive one of its kind. The silk dressing was applied in the usual manner. The first dressing was on the fifth day, when half the drainage-tube was removed. The second dressing on the tenth day was necessary to enable us to remove the remainder of the tube. The

wound was all healed, except where the tube had prevented union. The third dressing was on the twenty-first day, when the healing was complete. The temperature reached  $100.5^{\circ}$  on the second day; by the third day it was below  $99^{\circ}$ , and never reached it again.

*Ligature of the Femoral Artery for Popliteal Aneurism.*—An ordinary straightforward case in a man, aged thirty-nine. The aneurism was a small one which had only been discovered a week before operation. The artery was tied with carbolised silk; drainage was insured by the use of three strands of catgut; catgut sutures were used. At the first dressings on the eighth day the wound was healed with the exception of a small superficial sore a quarter of an inch in diameter, situated at the point where the catgut threads emerged. The dressing was reapplied and removed on the fifteenth day, when cicatrisation was complete. In estimating the value of the new dressing it can be compared (1st) with carbolic gauze, and (2nd) with the salicylic cotton-wool used by Professor Thiersch. Compared with carbolic gauze: (1) It requires less frequent renewal, thereby saving the patient pain and discomfort, and the surgeon time. (2) It increases the chance of a speedy union of the wound by insuring rest in the early days of treatment. (3) It will keep for an indefinite time, whereas the gauze after the lapse of a few months loses its antiseptic properties. (4) It is cheap, and consequently saves the surgeon and patient expense. Compared with the salicylic cotton-wool it is found to possess two great advantages: it is more absorbent and more elastic. Its absorbing properties make it a much safer antiseptic; its elasticity prevents it from caking, and makes it more comfortable.—*Lancet*, Jan. 1, 1881, p. 10.

### 35.—NOTE ON A MODE OF ANTISEPTIC DRESSING.

By WALTER PYE, Esq., Assistant-Surgeon to St. Mary's Hospital.

I believe it will be found to be in the experience of all who adopt Professor Lister's method of dressing wounds that the gauze bandages are often very irritating to the skin; this is especially the case in hot weather, and when the dressing is applied anywhere on the trunk. The irritation is not felt at all in some cases, while in others it is great enough to produce a well-marked eczematous or ecthymatous eruption.

For the last six months, while carrying out in every other respect all the ordinary antiseptic precautions, instead of the prepared gauze I have used a layer of cotton wool impregnated with salicylic acid as a dressing for operation wounds, in the hope of getting rid of the irritation caused by the former material,



and of simplifying, if possible, the somewhat complex details of antiseptic dressing.

The operation having been performed under the spray, &c., the lips of the wound have been either painted with carbolic oil or covered with a strip of protective, and then the whole region has been covered with the prepared wool, a drainage tube being so arranged as to allow of the free escape of discharges into it.

For the purpose of securing asepsis an extremely thin layer of the wool seems to be sufficient; but as the discharges may become septic as soon as they have soaked through to the outside of the dressing, it has been found necessary to use a layer of sufficient thickness to ensure that this shall not occur in the intervals between the dressing of the wounds.

Of course, bandages or strapping of any kind may be used outside the cotton-wool dressings to secure them in position or to produce pressure.

As far as comfort to the patient is concerned, this form of dressing certainly has seemed to be an improvement on the usual plan; and it has to be considered whether it is equally efficacious in securing asepsis.

A wound may be considered to have run a perfectly aseptic course when there is throughout its healing no fever and no suppuration. There is, however, a slightly less perfect way of healing, which is, so far as I have seen, fairly common among all who use antiseptic precautions, and which may, from a clinical point of view, be regarded as aseptic, namely, when there is no fever throughout, and no suppuration until the healing of the wound has well advanced, when a small quantity of healthy sweet pus is formed.

Wounds both large and deep will not unfrequently under good hygienic conditions heal without suppuration, and indeed perfectly aseptically, whether special precautions have been taken to procure this asepsis or no; but it may well be doubted if, under the conditions of ordinary cleanly surgery, so large a proportion as nine out of ten wounds would be free from some constitutional disturbance, and that six out of ten should remain absolutely free from suppuration during the time of healing.

Two preparations of the wool were used. The first was procured from Messrs. Watts & Company, Edgeware Road, and was of German manufacture, having for its name "Salicylsaure Charpie Baumwolle." The second was prepared by Messrs. Wyman & Westman, and is called "Salicylic Wool."

One caution is needed in the handling of it. It should not be tossed about, or the particles of salicylic acid adherent to its fibres being dislodged, will cause uncomfortable coughing and sneezing; this is especially the case with the English preparation. —*St. Bartholomew's Hospital Reports*, vol. xvi., 1880, p. 115.

## 36.—ON SOME MEDICAL COMPLICATIONS OF SURGICAL PRACTICE.

By Dr. HECTOR C. CAMERON, Surgeon and Lecturer on Clinical Surgery, Glasgow Royal Infirmary.

Gout and rheumatism are both diseases often developed in a striking way in surgical patients. In saying this, I do not merely mean to affirm that the injury of a limb or joint in a gouty or rheumatic patient may ultimately assume a character in keeping with the constitutional peculiarity of the individual. This is, no doubt, strictly true, and in accordance with clinical experience. Thus, a medical man lately told me that he had a patient who, if he wore a new and tight boot for a day, always paid the penalty by getting an attack of gout in the irritated foot; and I saw in summer the same sort of fact illustrated in the case of a patient who, having had a small cystic tumour removed from the upper and inner part of his foot, suffered a consequent attack of gouty inflammation in the great toe and foot, which confined him to the house for many weeks. But an explosion of gout may also take place as the immediate consequence of an accident, its manifestation being developed in parts remote from the seat of injury. This fact is not one which we in Glasgow have many opportunities of observing. Amongst our hospital patients, in whose cases we chiefly study the effects of injury, the disease may be said to be unknown. But I have once, in private practice, met with a good illustration of the fact.

Five years ago, I saw a middle-aged gentleman, who had fallen on the palm of his hand from a height of a few feet. He had been seen, in the first instance, by Dr. J. Wallace Anderson, who, finding that he had sustained a severe sprain of the wrist, fixed the hand and forearm on an anterior splint, and applied fomentations. After the lapse of a very few days—I cannot precisely recollect how many—he was seized with a most typical and painful fit of the gout in the great toe of his left foot, which confined him for some time to bed. He had never suffered from gout before, but told us that his father was a martyr to the disease. He has himself, I believe, more recently passed through a second attack, arising without any such obvious exciting cause as on the first occasion. On this subject, also, I may quote from Paget's writings, "People thus combustible," he says, "are not rare; you may liken them to lucifer matches; gout explodes in them whenever they are roughly injured. It may appear localised either in the injured part or in any other; for the effect of the injury may be two-fold; it disturbs the nutrition of the part on which it is inflicted, and, in a less degree, and consequently, it may disturb the



general health, and thus induce the occurrence of gout and its localisation in some part even more apt for it than that which is injured. Hence, you may meet with two different groups of cases. In the one you find men, whom you may suppose to have been just ready for a seemingly spontaneous attack of gout, who casually hurt their feet or their hands, or wrench one of their joints, and in a few hours, or in a day or two, the gout appears at the injured part. In the other group are those who are injured in some part not usually apt for gouty inflammation, and in whom, while they are not yet recovered from the injury, gout appears in some distant part. Among them you may have to count some of those on whom you have operated. Your surgical injury, together with the associated mental disturbance, will have sufficed to let appear the gout, which might else have been repressed or healthily concealed. I have known a patient suffer a sharp attack of gout after each of three operations which he has undergone."

When we come to examine into the occurrence of rheumatism in connection with surgical practice, we are met with a preliminary difficulty from the fact that the word "rheumatism" is used in a vague and uncertain way, and includes, or rather, is often made to include, diseases having widely different origins and very different pathological characters. Leaving altogether out of sight well marked examples of pyæmia, in which the joints are the seat of inflammatory mischief (for in such cases there is no ground for a mistaken diagnosis or a difference of opinion), there are, at least, four varieties of ailment met with in surgical practice, all of which are apt to be called "rheumatism," while only one of the four is, I believe, really the disease known to physicians as acute articular rheumatism or rheumatic fever. Let me detail the chief features of a case which illustrates the occurrence of one of these so-called "rheumatisms."

A medical man, with a scratch on his little finger, apparently got it poisoned while dressing a septic wound, the result of a scald. The illness was ushered in by pain in the finger, chilliness, shivering, and high fever. An incision was early made into the swollen and tender spot, and some pus evacuated. Still the pain continued, and soon the lymphatics of the arm showed signs of inflammation, an abscess ultimately forming in the axilla. The little subcutaneous bursæ over the phalangeal joints of the affected finger, which were everywhere very tumid and swollen, also became filled with pus. These were opened as they became tense, and the axillary abscess was evacuated. Still, improvement was only slowly manifested; and the last phalangeal joint was discovered to be disorganised, a grating of the two little bones being easily perceived on the slightest movement. So far, the description of this case is that of an

ordinary poisoned wound of no very unwonted severity. But just when the finger and arm appeared to be progressing satisfactorily towards recovery, a new feature arose in the case. Sharp pain was experienced first in one knee and then in the other; effusion of fluid followed quickly in both joints, and along with this new complication there was a marked rise of temperature. Soon other joints became affected in rapid succession, until the wrists, elbows, shoulders, knees, and ankles, were all more or less painful, stiff, and swollen. The small joints of the hands and feet were especially the seats of swelling and sharp pain. In none, however, was effusion to be detected except in the knees. No rigors took place, but there were frequent sweatings. The constitutional symptoms were never very severe; but the pain was often very unbearable. Sleeplessness was a prominent feature throughout this stage of the illness. Improvement and relapse occurred in the course of this rheumatoid attack, with provoking alternation, during very many weeks; and even now, after the lapse of more than six months from the commencement of his illness, the patient can hardly be said to have entirely recovered. Such an attack as that here detailed forcibly calls up to one's mind the disease known as gonorrheal rheumatism; and there seems no very good ground for supposing, but quite the contrary, that either the one or the other, has anything in common with acute articular rheumatism. Gonorrhœal rheumatism has been observed to affect all the articulations, but seems to be most frequent and most obstinate in the knees and the smaller joints of the extremities. The accompanying fever is not usually great, while chills and rigors are seldom complained of. The pain is often extreme, and effusion takes place rapidly, and sometimes, especially in the knees, in great quantity. In certain cases, the subcutaneous bursæ and the bursal sheaths of tendons are the seats of effusion as well as the joints. Treatment produces little or no effect; the disease, when severe, is always very chronic, and marked throughout by a disposition to occasional amendments, followed by disappointing relapses. So far, the parallel between the two kinds of cases is very exact; and it is not surely assuming too much to say that in both cases, the articular affection is probably excited by the absorption into the system of some form of septic poison. Fatal pyæmia follows every now and again upon poisoned wounds, as it does upon attacks of gonorrhœa, and it is not, therefore, matter for surprise that mischief of a less serious but analogous character should also, in other cases, be developed.

Another very interesting and very serious form of rheumatoid disease, often encountered by surgeons, is that which occurs in



connection with acute necrosis of the long bones. The disease begins in the periosteum, being an acute, phlegmonous periostitis; sometimes it partakes of the characters of an osteomyelitis; very commonly, I imagine, it is an inflammation of the bone, its membranes and its marrow. The patient is always a child; the immediately exciting cause usually a trivial injury. The result is large abscess and extensive necrosis; while, along with these, there is often pain and swelling in several joints, and well marked pericarditis. Intense suffering and great constitutional disturbance are characteristics of the disease; alarmingly high temperature, thirst, restlessness, and delirium being early manifested. But I shall best explain what I mean by narrating one or two cases.

*Case 1.*—A few weeks ago I was asked to see a little boy, four years of age, who was under the care of Dr. Grainger, of Dowanhill. On the 28th of August last, this child fell upon his right knee, but no special complaint was made of it until the following day, when he began to suffer pain. He also was feverish and ill, and all the large joints of the body became painful and swollen. The left foot and right thigh were the seats of a diffuse and general swelling. On the third day he appeared to Dr. Grainger to have all the symptoms of acute rheumatism. Præcordial pain was complained of, and a murmur was present, most distinctly audible over the apex of the heart. The swelling of the thigh continued to increase, and about the fourteenth day after the commencement of the illness, it became evident that it was the seat of a large abscess. I saw him two days after this. The joints, which had been painful and swollen, had almost returned to their natural condition, although the child still looked very ill and was very feverish. The right thigh was distended by an abscess throughout its entire extent. It was opened, under chloroform, with antiseptic precautions, and, on introducing my finger through the incision, I found, as I had anticipated, that almost the entire shaft of the femur had necrosed. The patient has, up to the present time, progressed favourably; the abscess cavity remaining aseptic, the general health being comparatively good, and the discharge slight in amount and serous in character. The dead shaft of the femur is as yet, of course, almost in *statu quo*.

*Case 2.*—In the autumn of 1876, I treated a very similar case in conjunction with Dr. Renfrew. A boy, about fourteen years of age, had been struck by a cricket ball on the right shin. On the day after, he was attacked by great pain in that situation and was suffering from high fever. On the following day I saw him, and already there was fluctuation over the front of the tibia. I therefore made an antiseptic and free incision into the part, under chloroform, gave exit to a quantity of fluid already

becoming purulent, and discovered that a large part of the tibia was bare and dead. Very soon after this a painful and troublesome rheumatoid affection of various joints supervened. There was never any evidence of pericarditis however. The necrosis was not confined to the shaft of the tibia, but implicated the lower epiphysis, and so led to disorganisation of the ankle joint. I therefore found it necessary ultimately to amputate a little below the knee, and this was done, with Dr. Renfrew's concurrence, on the 17th Oct. The patient made a good recovery, although the painful disorder of the various joints, and especially of the hips, retarded his convalescence.

This kind of affection, whatever its exact pathology, has certainly, I think, nothing in common with acute rheumatism, as it is known to the physicians. It bears a more striking resemblance to pyæmia, and must, I suspect, be considered a form of that disease. Yet it is frequently recovered from, and occurs in many cases without putrefaction having invaded the abscess cavity, sometimes, indeed, before the abscess has been opened, as happened in the first of the two cases detailed above. The following is an account of a fatal case in which we had the opportunity of making a *post-mortem* examination. Death ensued, as will be seen, while the abscess was yet unopened.

*Case 3.*—A girl, about 10 years of age, was admitted into my female ward on the afternoon of the 3rd of May, 1878. I saw her on the following morning, when she was evidently in a hopeless condition. She was extremely restless and delirious; her aspect was livid and cyanotic; her breathing rapid and laboured; her pulse could hardly be counted; while her temperature was exceedingly high. The great toe of her right foot had the appearance of having lately been crushed, and I learned from her mother that this accident had occurred about three weeks previously. It was now nearly whole. The right leg was cedematous and tense, evidently very tender to the touch, and red in front; and a slight examination served to show that there was an acute periostitis present, deep fluctuation being distinct over the tibia. Examination of the chest revealed the presence of a well marked pericarditis. Any handling of or interference with the left leg elicited almost as much complaint as did the movement of the right, in which the periostitis existed; but there was no distinct swelling of the joints. Over the whole cutaneous surface of the body there was a pustular eruption; each pustule commencing as a clear pearly vesicle. With these were intermixed minute purple, petechial spots. As the child appeared to be moribund, I contented myself with prescribing a little stimulant, and ordering the limb to be kept wrapped in a hot fomentation. She lingered until next morning. The following is the substance of Dr. Foulis' report of



the *post-mortem* examination:—"The body is that of a young girl in fair condition. Over the surface of chest, back, shoulders, head, and thighs are a considerable number of pustules, varying in size from a pin's head to a pea. The right great toe is somewhat bruised; and, on incising over the right tibia, a quantity of turbid fluid escaped. The periosteum is separated from the bone throughout a length of about 6 inches. *Chest*.—Pericardium coated with soft yellow lymph and contains about two drachms of turbid fluid. No other serous membrane inflamed. Heart normal in structure; but, on the surface of the septum ventriculorum, there is a small pustule surrounded by a reddish zone (an infarct). Lungs slightly reddened, but everywhere healthy and crepitant. Air tubes, gullet, and stomach normal. Intestines also normal, except at the lower end of the ileum, where there is considerable congestion of the mucous membrane, and an enlargement of the solitary glands, which are like heads of pins on the surface. Liver, gall bladder, and spleen normal. Supra-renal capsules softened. Capsules of kidneys rather adherent; while the cortex of each is dotted over with minute red and yellow points, in most of which is a tiny drop of pus. Pelvic organs, ureters, and pelvis of the kidneys normal. Mesenteric and right inguinal glands rather enlarged and red in colour. Brain and spinal cord normal."

But, while we thus meet with spurious forms of rheumatic affection, or perhaps I ought more correctly to say, with ailments bearing a more or less striking resemblance to rheumatism, in cases of gonorrhœa, poisoned wound, and the acute necrosis of early life, it is also true that genuine acute articular rheumatism is every now and again excited by surgical injury, just as gout is, in persons predisposed to, or who have previously suffered from, the disease. The following case is an example of the truth of this statement:—S. C., aged 26, a railway guard, was admitted into the Infirmary on 5th August, 1873, with a severe smash of his left knee and thigh, caused by some railway waggons having passed across the limb. I performed a primary operation just below the trochanter, with antiseptic precautions. All went well for the first three days, when I received a note from the house surgeon saying that the patient had been feeling ill, and was, he feared, about to develop tetanus, since he complained of some pain and stiffness in his leg and arms, and also in his jaws. Fortunately, as the result proved, these symptoms did not portend the advent of tetanus, but were the commencement of a very severe attack of acute rheumatism, with well marked cardiac complication. He made a good recovery, is still in good health, and discharges the duties of a humble office at the Glasgow station of the railway company in whose service he met with his injury. He had a severe attack of rheumatic fever

six or seven years before, when resident in London.—*Glasgow Med. Journ.*, Feb. 7, 1881, p. 95.

37.—ON SOME POINTS CONNECTED WITH THE  
IMMEDIATE TREATMENT OF WOUNDS.

By Dr. WILLIAM MACEWEN, Surgeon and Lecturer on Clinical  
Surgery, Glasgow Royal Infirmary.

*Preliminary Remarks.*—In order to place a wound in the condition most favourable for healing, all sources of irritation must be avoided or removed, whether they arise during the performance of an operation, or in the immediate treatment of the wound, whether in the substances employed or in the manner of using them. When a linear incision requires to be made, if it be accomplished by a single clean cut with a keen edged bistoury, it will produce less irritation than if it were made by half a dozen cuts attempted to be placed in the same line; because in the latter the tissues are more injured, the incised area is multiplied and a ragged instead of a smooth section results. Hence, when an operation can be accomplished by a single incision instead of by half a dozen cuts, the irritation caused in making the wound is reduced to a minimum, and it is thereby rendered less liable to the production of pus. When the wound has been formed, the less it is handled or fingered the better. If its lips require to be drawn aside for any purpose, this ought to be done as gently and as lightly as is consistent with efficiency. Any over-straining or over-stretching ought to be avoided. When the operation is completed, refrain from introducing foreign matter into the wound. If it have been performed under the spray, there is no occasion for drenching an aseptic wound with carbolised preparations; and, above all, consider before using substances such as one to twenty watery solution, or chloride of zinc, forty grains to the ounce. Some cases there are where the use of such strong remedies is imperative, but the great majority of wounds do not require them; and when this obtains, their application does harm and retards the healing. The free use of Volkmann's spoons for cleaning out sinuses, and for the removal of foetid granulations, lessens the number of cases in which it is necessary to apply strong antiseptic solutions.

*Elastic Webbing as a Tourniquet.*—The next point is the arrest, or rather the prevention, of hemorrhage, as in most cases bloodless operations are now performed, and the surgeon endeavours to occlude the open mouths of the blood-vessels prior to the removal of the restraining bandage. In rendering the limb bloodless, the bandage invariably used in my wards is the broad elastic webbing. It serves two purposes: first to empty the limb of blood, when Lister's method of doing so is



not employed; second, to act as a tourniquet. In the latter respect it is much safer than the elastic rod and catch, as with this rod the force is concentrated on a very small space, and is consequently apt to injure the tissues, more especially as the amount of pressure is difficult to regulate. In the broad elastic bandage the pressure is distributed over a considerable area, its amount being adjusted by the cumulative effect of several layers of the bandage, one over the other, so that the desired constriction can be more easily measured.

*The Old Ligature.*—We then endeavour to close the mouths of the blood-vessels before removing the elastic webbing. The choice of a ligature is important. Formerly threads of various substances, most often of silk, were used as ligatures, their ends being left long and hanging from the wound. The part being exposed to the air, these threads were apt to keep up a communication between the atmosphere and the interior of the wound. As they could only be removed safely after they had set up sufficient irritation to enable them to ulcerate their way through the coats of the artery, there generally was a discharge of pus which rapidly became putrid, and the long ligature established a conduit by which the putrescence penetrated to the very interior of the wound. Few things could be better devised to set up irritation, or better calculated to induce pyæmia. Following in the wake of the ideas which are now prevalent regarding short ligatures, some still use silk, properly carbolised, and cut off the ends of the ligature close to the artery, in the hope that the noose may, as it sometimes does, become encapsuled, and thus produce little or no irritation. This, however, cannot be depended on, and generally leads to disappointment. The tissues often assume a detergent action from the irritation occasioned by the silk, ulceration is induced in the extremity of the vessel, ending in the slough of this part, and the emancipation of the piece of silk, which is washed out of the wound in the purulent discharge. Sometimes the wound heals, and the patient is dismissed cured(?), the silk being supposed to be encapsuled; but afterwards an abscess forms and continues to discharge, until the small knot of silk is thrown out of the tissues.

*Carbolised Catgut Ligatures.*—What was wanted was a substance which would be efficient as a ligature, and which would not produce irritation in the wound. The desideratum was obtained in an animal ligature which served its occluding mission, and then became absorbed. This Mr. Lister found in ligatures of carbolised gut. Animal ligatures of various kinds were long previously tried, were found wanting, and were abandoned. Lister, however, believed that if these ligatures were first rendered aseptic, they would answer their purpose, and

ultimately become absorbed. This has been fully realised. The carbolised catgut ligature has been in use for a period of over ten years, and it has been of immense service. You see such ligatures applied daily in our wards, and for ordinary purposes nothing could answer better. With the exception of the main vessels in the shoulder and the hip, they are applied for the ligation of arteries in amputations in all other regions, and secondary hemorrhage after their use is never seen. They are, of course, applied directly to the artery, and not so as to include a portion of tissue surrounding the vessel. It is my distinct impression that secondary hemorrhage is not so often heard of since the introduction of such ligatures as it used to be under the use of silk. Many faults have been ascribed to carbolised catgut ligatures, but, with one exception, they are incomprehensible, as they never take place in my hands. The only deficiency which may be truly urged against them, when they are proposed as a ligature of a main trunk, or for the deligation of an artery in its continuity, is, that they are absorbed too soon. Carbolic gut softens, and yields in about forty-eight hours, and therefore in certain cases it may be necessary to use a ligature which would maintain its constricting force for a longer period. Mr. Lister has been endeavouring to secure such a ligature, and believes he has now succeeded; but hitherto he has not seen fit to publish his results.

*Chromicised Catgut Ligatures.*—With a view of obtaining a ligature which would serve this end I made, during the past few years, a series of experiments with catgut prepared in chromic acid and glycerine; and without going into detail concerning these investigations, it is sufficient to say, that ligatures were obtained which admirably serve the purpose for which they were intended. They are prepared by making, first a watery solution of chromic acid, one to five; then one part of this solution is added to twenty of glycerine. This forms a dark greenish compound, in which the hanks of the catgut are inserted and retained for seven or eight months, the bottle containing them being occasionally shaken. At the end of this time the catgut acquires a semi-translucency, and has a dark colour like preserved ginger. It is then ready for use, and is stored in a solution of carbolic acid and glycerine (one to ten). The size of the catgut which is of most use in the ligation of large arteries (excluding such as the innominate) is the medium, and this size has been very frequently tested since 1877. In the shape of deep sutures, this gut has been, and, as you see, is daily being used in the wards. In this way we are enabled to ascertain its behaviour while in contact with the living tissues.

*The Behaviour of Chromicised Catgut in the Tissues.*—Three



very important questions arise regarding the efficacy of any ligature. First, does it produce irritation in the tissues? Second, how long does it act efficiently as a ligature? and, third, when does it become absorbed?

*Does it Produce Irritation?*—Regarding the first inquiry, you will be able to verify the fact from personal observations, that this chromicised catgut does not produce irritation, as there is none about the parts of the wounds into which the deep sutures are inserted. Take for example, that case of amputation above the knee in Ward 29, occurring in a man about 40 years of age, the recipient of a severe railway accident, whereby his right lower limb was shattered. Lister's modification of Carden's operation was performed. Three chromicised deep sutures were introduced. At the second dressing, which you saw yesterday, a fortnight after the operation, there was not a drop of pus either on the dressing or from the wound; a little-coloured serum exuded on pressure from the decalcified drainage tubes. There was no redness or irritation in the vicinity of the chromicised stitches, which were absorbed some time between the second and the end of the third week. Another test is to place the ligature round a vessel in its continuity: and if the wound heal without production of pus, and abscesses be not afterwards formed, it may be concluded that the ligature has not produced irritation. This has been done in a number of cases, out of which the following may be quoted. A ligature of chromicised gut was placed on the common carotid of a man about middle age, affected with aneurism at the bifurcation of the carotid artery. The wound healed without that production of pus. The patient was kept under observation for six weeks; the aneurism disappeared. He was then dismissed, but reported himself six months afterwards. There was no trace of the old swelling, and he stated that the wound never re-opened. There was no abscess at any time, and the ligature was never heard of. Another patient, about 40 years of age, had a chromicised catgut ligature applied to the femoral artery at the apex of Scarpa's triangle, for popliteal aneurism. The wound healed without production of pus. The patient was kept under constant observation for some months, and he reported himself a year afterwards. There was no re-opening of the wound, the ligature was never seen again, and the aneurism was cured. In a case of strangulated hernia, besides the constricted gut, a large portion of omentum was found in the sac. The omentum was gangrenous. Four chromicised catgut ligatures were inserted so as to occlude the vessels on the proximal side of the mortified part, which was then removed. The ligatures were never again seen, the wound healing as an antiseptic wound does. The patient reported himself some months after in

perfect health, which he had enjoyed since dismissal. Many other cases might be adduced, in which the ligatures have been enclosed, and have not been heard of; but these are sufficient to illustrate the fact that they do not produce irritation in the tissues.

*The Length of Time during which it Resists the Action of the Tissues : Period when it is Absorbed.*—The second question is to ascertain the length of time during which the ligature will maintain its hold in the tissues before being softened. With a view of determining this point, the catgut has been used as a deep stitch in thirty-one instances. The earliest time in which it was found softened was nine days; the longest nineteen; the average fourteen. The softening was measured by its yielding to traction applied to both ends of the catgut, so that the ligature, though softened, still maintained its grasp at the end of fourteen days. In another series of cases, the stitch was left until the external portion dropped off, the internal having become absorbed. It was found that this process was completed between the fifteenth and the twenty-fourth day, the average being about the twentieth day. It will be seen that there is a considerable difference between the completion of the processes in various cases, this depending on the vital activity of the tissues into which the ligatures are inserted. No opportunity has hitherto been afforded of examining, after death, the intimate relation of these chromicised stitches to the tissues. We may assume that their ultimate behaviour is similar to that of carbolised catgut, with the exception, that the phenomena attending absorption are retarded.

*Use of Chromicised Catgut.*—This quality of durability makes the catgut peculiarly fitted for other uses than the ligation of large vessels in their continuity, such as the approximation of the pillars of the ring for the radical cure of hernia. Mr. Wood, whose operation I have several times successfully performed, criticises the approximation of the ring by carbolised catgut, urging with considerable point, that this can scarcely be a reliable procedure, seeing that the carbolised catgut gives way in two or three days, and that firm union of the pillars of the ring can scarcely be expected to be accomplished in that short space of time. This objection is entirely obviated by the use of chromicised catgut. It is strong enough to bring the pillars of the ring firmly together, and its durability is such that, by its intrinsic force, it maintains them together for about a fortnight. In four such cases, two occurring in adults and two in children, the pillars of the ring were brought together by a couple of chromicised stitches. The wounds healed over them, and they were never seen afterwards. At the end of six months three were examined, and found to have their rings



closed; the fourth was seen about nine months after, and had still a firm wall.

*En Résumé*—the physical qualities of the catgut are such as to commend it as a ligature. It is very pliable, having very slight elasticity, but not sufficient to cause it to yield before the impulse of the current of blood in the largest arterial trunks. A firm secure knot can be tied on it. Physiologically, it produces no irritation in the wounds. It resists the action of the tissues for about a fortnight. It disappears about the twentieth day. It is eventually absorbed by the tissues, as is evidenced by their action on the chromicised stitches.

*Bone-Sutures and Drains.*—Chromicised catgut, prepared in stronger solutions than the above, will resist the action of the tissues for a much longer period; and catgut of this kind has been used as bone-sutures, with the idea of doing away with the removal of the stitch. A drain may also be formed of catgut, which will resist the action of the tissues for a fortnight, and then be slowly absorbed. This might, in certain cases, be substituted for hair.—*British Medical Journal*, Jan. 29, 1881, p. 150.

### 38.—THE DRAINAGE OF WOUNDS—BUTTON SUTURES.

By Dr. WILLIAM MACEWEN, Surgeon and Lecturer on  
Clinical Surgery, Glasgow Royal Infirmary.

When the arteries have all been secured, there will still be a slight oozing of blood from the tissues, which it is impossible at times to prevent, especially when large surfaces are involved. Besides this, an exudation of serum must be expected, in greater or less abundance, according to the irritation. If the edges were accurately brought together, so as to close the wound completely, the blood and serum would collect in the interior of the wound, and prevent, for the time being, the coalescence of the cut surfaces. The irritation produced by this tension would be apt to induce suppuration. In order to avoid this, provision must be made for the drainage of the wound. This must be suited to the material to be drained—blood, serum, and possibly, pus. As far as the first two are concerned, the physical character on which their drainage depends are sufficiently alike to permit of their being considered together; while pus, though it varies much in density, must be looked on separately.

*India-rubber Tubes: their Disadvantages.*—The introduction of systematic drainage of wounds was due principally to Chassaignac, who effected his purpose by the use of India-rubber tubes, which still bear his name. These tubes, familiar to all of you, did excellent service, greatly facilitating the healing of

wounds. There are, however, certain disadvantages connected with their use in antiseptic surgery, when the material to be drained is reduced to the minimum. They cause irritation by acting as foreign bodies, interfering with the rapid healing of the parts in their immediate vicinity; they blacken the protective plaster, showing the probability of the presence of irritating compounds; and they necessitate the dressing of the wound, in order to shorten or otherwise adjust them. These are objections which may scarcely be appreciated by those who do not practise antiseptic surgery; but, the nearer we approach perfection in the treatment of wounds, such sources of irritation will become the more prominent, and the greater will be the desire to obviate them.

*Carbolised Catgut : its Disadvantages as a Drain.*—Probably animated by such a desire, Mr. Chiene proposed the use of carbolised catgut as a substitute. Eight or twelve threads of carbolised catgut would effect the drainage of the wound, through capillarity, and its absorbability would prevent the necessity of dressing the wounds. Theoretically, this had considerable advantages; but, practically, it had objections. It was found that carbolised catgut, soon after introduction into the wound, swelled and softened. It became closely connected with the neighbouring tissues, by virtue of its infiltrations with new cell-growth, connected with its absorption and organisation. When it was found necessary to remove it, it sometimes set up inconvenient bleeding from the rupture of newly formed minute vessels. Its absorbability was its main advantage; but the rapidity with which this was accomplished destroyed, in great measure, its utility—as it was difficult to presage whether, in a given wound, drainage might not be required for a longer period than a few days, beyond which the carbolised catgut was useless. Its physical character precluded it from draining pus.

*Horse-hair as a Drain.*—Mr. White of Nottingham proposed, as a substitute, horse-hair, on account of its cheapness, its increased capillarity, its non-absorbability, and its non-irritating properties. As you see horse-hair very frequently used as a drain, I would like to draw attention to several points which help to make the drain efficient. In purchasing horse hair, it has not been pointed out that most tails used commercially are dyed. It is all the more important to keep this in mind, as black horse-hair has been recommended. Now, most tails contain naturally a few hairs of a different colour from the prevailing one. They are therefore dyed, so as to obtain the whole hairs of an uniform black colour. This pigment is to a certain extent discharged by soaking in water, and more so by steeping it in carbolised solution. Some have been seen which dis-



charged colour after the tenth washing. It has, therefore, been found better to secure a tail in a natural condition. Then thoroughly wash and boil it, to rid the hairs of any foreign matter which may be adherent to them. Next steep them in a watery carbolised solution, and dip them into a similar solution prior to insertion into the wound. The thick end of the hair ought to be inserted into the wound, in order to have the flow of the fluid in the direction in which the scales overlap.

*How Capillary Drains act, and what they are suitable for Draining.*—The next point is to inquire how horse-hair acts as a drain, and what it is suitable for draining? A wisp of horse-hair introduced into a wound is supposed to act by capillarity. It can do so in two ways : first, by the minute spaces existing between the individual hairs forming capillary tubes ; and secondly, by the flow of the fluid along the outside of the hair. In this connection, there are one or two points regarding capillarity which it is necessary to remember. First, the finer the tube the higher will the fluid rise in it ; consequently, in this respect, hair will be a better capillary drain than most sizes of catgut. Second, when a capillary tube of unequal diameter, wide at one extremity and narrow at the other, is placed horizontally, fluids forming a biconcave meniscus flow from the wide toward the narrow end. The hairs ought, therefore, to be spread out in the interior of the wound, and brought together near its lips, when tubes or spaces will be formed between the hairs, having their wide ends toward the inside of the wound, and their narrow extremities at the debouchement of the drain. Third, all liquids do not rise to the same level in capillary tubes, while some are actually depressed within them. Serum and liquid blood rise within these tubes, while laudable pus does not do so to any marked extent. For blood and serum, horse-hair is an excellent drain, but for pus it is not reliable. Even for blood and serum, the entire dependence on capillarity is a questionable practice, as this force is at best a feeble one. When hair is placed in the hollow of a wound, and is cut off close to the lips of the wound, these being at a higher level than the interior, the fluid will require to mount up ; it then acts feebly as a drain, even for serum and liquid blood. Of course, it may be said that drainage can be effected by making an aperture in the most dependent part of the wound, and calling in the aid of gravity—a very excellent plan, but one not always commendable for other reasons.

*Capillary Syphon Drains.*—There is, however, a much more efficient way of using the hair as a drain : by converting the tubes found between the individual hairs into syphons. The power of the syphon is much greater than that of capillarity. The wisp of hair may easily be formed into a syphon by leaving

the portion on the outside of the wound longer than that which remains in the interior. Before a syphon acts, a vacuum requires to be made, or a liquid communication established between the fluid to be drained and the long arm. This communication can easily be effected by dipping the hair into a weak carbolised solution before introducing it. The capillary action possessed by these hair-spaces also aids in establishing the flow. In order to maintain the tube-like form, a hair is tied round the outer extremity of the wisp. The outer part of the hair is placed in contact with moistened gauze, which further increases the syphon action.

*Resorbent Tubes: Disadvantages.*—Capillary-syphon drains being inefficient for the drainage of pus, something else is required. Tubes other than capillary answer, if suitably placed. India-rubber tubes are employed by most surgeons; and objections to their use have already been stated. Recently, Neubauer introduced what he called “resorbent tubes,” which were drilled out of horse and ox bones, and then decalcified and carbolised—their object being to act as drains, and then to yield to absorption. In several cases in which they were used, they disappeared in a few days—two to five. These tubes, therefore, had one of the objections which pertained to the carbolised catgut drains, that of disappearing too soon. They acted during the period that blood and serum required to be drained, and disappeared before pus was likely to be formed. They only did the work which the capillary syphon drain could do a great deal better. Even had they been efficient, their price was such as to preclude their general application: when six were bought, they were obtained at 1s. 3d. each.

*Drainage-tubes of Chicken-bone.*—The principle of using a tube which would serve its purpose as a drain, and then become absorbed, was excellent, provided this could be carried out practically. What was wanted was a tube which would remain in the tissues, as a drain for eight or ten days; and which, at the same time, would be reasonable in price. It was determined to set about finding this. Instead of being at the expense of drilling tubes out of bone, it was thought that nature might undertake the duty for us. The hollow bones of birds and some animals could be easily converted into tubes. After examining and experimenting with the tibiæ and femora of many birds and animals, it was seen that the tibiæ and femora of the domestic fowl were the most suitable as to length and calibre. It was also found that the cooking necessary for preparing the fowl for table-use in no way impaired the value of the bone. This at once reduced the expense of the material, as an abundant supply of chicken-bones, previously regarded as refuse, could be obtained in every large hospital. The patients made their



repaſt upon the chickens, while their tissues conſumed the bones.

*Preparation of Drainage-tubes of Chicken-bone.*—The method of preparation is as follows. The tibiæ and femora are ſcraped and ſteeped in hydrochloric acid and water (1 to 5), until they are ſoft. Their articular extremities are then ſnipped off with a pair of ſciſſors; the endosteum is raiſed at one end, and pushed through to the other extremity, along with its contents. They are then reintroduced into a freſh ſolution of the ſame ſtrength, until they are rendered a little more pliable and ſofter than what is ultimately required (as they afterwards harden a little by ſteeping in the carboliſed ſolution). When thus prepared, they are placed in a ſolution of carbolic acid in glycerine—1 to 10. They may be uſed at the end of a fortnight from the time of introduction into the glycerine ſolution. Holes may be drilled in them with a punch, or clipped out with ſciſſors.

*Physical Properties of Drainage-tubes of Chicken-bone.*—Tubes are thus formed, having the following physical properties. They are ſemi-transparent, pliable, and elastic, capable of retaining for ſome time their form under the weight of thick flaps. The tibiæ make the longer, the femora the wider tubes. The length and width vary conſiderably, the longeſt being a little over three inches, the wiſeſt being over half an inch.

*The advantage of threading Drainage-tubes with Hair.*—Before deſcribing their behaviour in the tissues, it may be well to remind you that theſe tubes are always threaded with hair before they are introduced into freſh wounds. Any kind of drainage-tube introduced into a freſh wound is apt to become blocked with blood-clot. Surgeons have been in the habit of removing drainage-tubes, cleaning them of the clot, and reintroducing them. The reintroduction irritates the wound, and at times ſets up freſh bleeding. Liſter, taking advantage of the ſhrinking of the blood-clot, left the tubes undiſturbed, ſtating that ſpace ſufficient was left between the blood-clot and the tube to inſure drainage. This has not always been found ſufficient. To obviate the blocking of the tube, it is threaded with hair, which ſheds the blood and ſerum of the firſt few days; after which, the hairs, being no longer of uſe, are removed, leaving the drainage-tube perfectly patent. If it be preferred, part may be removed at the firſt, and part at a ſubſequent dressing. In the caſe of the chicken-bone drain, the hair helps to maintain the calibre of the tube during the firſt few days, eſpecially where the dressings might exerciſe preſſure. The action of the hair as a capillary ſyphon is in no way impaired, but rather improved, by being introduced into the tube.

*Duration of Chicken-bone Tubes in the Tissues.*—Out of one hundred carefully recorded observations, the average duration of the chicken-bone tubes was something over eight days.

*Chromicised Chicken-bone Tubes.*—If the surgeon would like a decalcified tube which would resist the action of the tissues for a longer period, he can secure this by steeping the chicken-bone tubes in a chromicised, instead of a carbolised, solution. Some such have resisted the action of the tissues from a fortnight to about three weeks. These chromicised tubes are, however, seldom used, because our fresh wounds rarely require drainage for so long a period.

*Are these Decalcified Chicken-bone Tubes absorbed by the Tissues?*—Some surgeons seem to believe that these tubes are not absorbed, but that they are simply dissolved, as they would be were they immersed in a quantity of blood-serum or pus, kept at the temperature of the human body. That this is not so, the following facts will show. The tubes do not disappear, except when in contact with living tissue in a wound in the soft parts. When they are placed in the midst of a slough, they soften; but there the action ceases—they do not erode. Tubes have been placed in osseous cavities not lined with granulations, from which putrid necrosed bone have been removed. There they have remained for weeks bathed in pus, which emanated from the neighbouring tissues, and they have undergone no other change than that of softening. On one occasion, a tube was placed in a collection of serum resulting from an injury over the muscles of the back. The cavity containing the serum filled rapidly after being emptied, so that the tube was only in contact with the living tissues for a very small part near the skin. This small part was eroded, while the remainder, steeped in the serum, was only softened at the termination of the tenth day. A puncture was then made in the most dependent part of the sac, the drainage supplied being so free as to permit the coalescence of the sides of the cavity, when the tube, which had not hitherto undergone absorption, became absorbed in four days. In another case, there was a slight depression in the limb of a patient, at the bottom of which a granulating surface existed, which discharged pus. On this granulating surface, a small portion of drainage-tube was laid. It was found that the tube was covered with pus after the lapse of six days. The tube generally was softened; but the only part which was eroded was that which lay on the granulating surface. These illustrations are sufficient to show that these tubes do not disappear by the chemical action of the secretions, kept at the temperature of the human body; but that they must be placed in contact with living tissue before they disappear, the leucocytes absorbing them.



In order to aid the observations of the behaviour of carbolised chicken-bones while in contact with the tissues, a small part of the tube was made to project beyond the lips of the wound. By-and-bye, this projecting portion was eaten through, and then dropped off; while the tissues closed over and absorbed the remainder. Tubes have been inserted into abscesses from which the pus has been thoroughly evacuated. When next looked at, fourteen days later, the portions of the tubes which projected from the wound were found detached, lying in the former opening; while a white ring, enclosed in granulation-tissue, marked the seat of the decalcified bone; and finally, the epithelium covered both from sight. As a rule, however, especially when the tubes were originally threaded with hair, their calibre generally diminished, from pressure of the walls and from the penetration and coalescence of the tissues through the apertures made in them; so that the decalcified tubes, having served their purpose, were slowly removed by molecular activity. The tissues have in this way, so far, the control of their drainage. The greater the normal molecular activity, the more quickly will the wound heal, and the more quickly will these tubes be absorbed; the weaker the vitality, the longer will the healing process take, and the longer will the drainage-tube remain.

*Button and other Sutures.*—Regarding button-sutures, you are aware of the various kinds already in use. The objection to these is, that they have one aperture in the centre, through which a wire is drawn, and which is then fixed to a catch on one or other side of the button, thereby tending to tilt the button sideways, and so bruise the tissue with its border. This can be obviated by using the button which I show you, and which is in constant use in my wards. It has a couple of apertures, placed very near to one another in the centre, and a double thread is brought through these apertures and tied—so that the pressure comes from the centre of the button, and the wires or threads may be tightened or relaxed without tilting the edge. They are easily adjusted. They can be made in a few seconds by using a sharp-pointed pair of scissors. Lead has generally been used for buttons, on account of its pliability. Block-tin may be had sufficiently pliable, and it is free from the production of black deposits, to which the lead gives rise. Chromicised catgut may be used with these buttons, one end of the double thread being tied into a loop—so that it may be opened to permit tightening or relaxation, as the case may require. It becomes softened and absorbed when the buttons become loose. The edges of the wound are generally brought together by several deep sutures of chromicised gut, with a number of stitches of carbolised gut between; the latter

absorbing in a few days, the former about the end of a fortnight.

*Conclusion.*—In conclusion, you will perceive that our aim is to place in wounds substances which, while effecting the purpose for which they were introduced, will yet produce no irritation, and will permit themselves to be absorbed in due course; so that, once having dressed a wound, we may not be forced to open the dressings for the purpose of readjusting the material employed. We aim at being able, after an operation, to judge of the character of the wound; make provision for its probable wants; and, while the patient is yet under the influence of the anæsthetic, apply a dressing which will remain untouched until the wound is healed, or, at least, well on its way towards being healed. By this means, the healing will take place more rapidly, and the patient will be relieved of much annoyance and pain. An accurately recorded rectal temperature will be a sufficient index of the constitutional condition of the patient; while a watchful eye on the dressings, to insure that discharge does not penetrate them, will secure the safety of the wound. If there should happen to be a discharge of blood during the first forty-eight hours, sufficient to stain the external dressing, the dressings are reapplied; and the opportunity is taken of removing the hairs from the tubes—unless chromicised catgut be used as a substitute. If there be no such discharge, the dressings are left on till the end of the first week; they are then opened, the wound inspected, the hairs removed, and the dressings reapplied. At the end of a fortnight, the wound is looked at for the second time; and, as a rule (in fresh wounds), it is found healed. You see excellent examples of this in the two excisions of the mammæ, in which the whole axilla had to be cleared out; and, in one of them, a large portion of the pectoral muscles had to be removed, as they were infiltrated with caseous deposits. These were looked at for the first time a week after the operation, and found almost quite united; the hair was withdrawn, and the dressings reapplied. At the end of a fortnight, they were looked at a second time, found firmly united, and the drainage-tubes absorbed. Again: in that Carden's amputation in 29 Ward, the same thing has happened; it was all but healed at the end of the week, and firm at the end of a fortnight. There was not a drop of pus from any of them.—*Brit. Med. Jour.*, Feb. 5, 1881, p. 185.

### 39.—ON THE PATHOGENY AND TREATMENT OF BRONCHOCELE OR GOITRE.

By EDWARD WOAKES, M.D., London.

Finding that experience had already, though empirically,



proved that some members of the group of metalloids, including iodine and bromine, exerted a curative influence upon goitrous disease, the inference that other members of the same group might act similarly, or even act more potently, was strictly within the lines of the therapeutic principle just indicated. The fluorine compounds were, so far as I know, untried. An appeal to them seemed legitimate.

To avoid complication, fluoric acid, or hydrofluoric acid as it is also termed, was selected as the nearest attainable approach to the element fluorine. The unmanageable nature of the acid, and its reputed violent action upon organised tissues, presented obstacles to its use. The unstable strength of the commercial acid was a further hindrance. All these difficulties were overcome mainly through the skill of Mr. Bullock, who readily devoted his energies to provide for the requirements of the case. A pure acid of fairly constant strength is obtained by redistilling the commercial acid; it then contains about 30 per cent. of the gaseous acid. By diluting this acid with 200 per cent. of water, a solution is produced capable of being tolerated by the stomach, and also of being preserved and dispensed in glass vessels. Both preparations should be kept in small quantities, as they undergo deterioration by the lapse of time. The strong redistilled acid must be preserved in gutta-percha bottles, which should be closed with a cork, as the gutta-percha plug usually fitted to such vessels admits air, and spoils the efficacy of the drug. Attention to these details, the importance of which I have learned in a four years' experience, will prevent disappointment in its therapeutic use.

In commencing its administration great caution was exercised. I began with fifteen-minim doses of the half per cent. solution in an ounce of water. As it happened, the first patient for whom it was thus prescribed, having been duly cautioned to discontinue the medicine if inconvenienced by it, presented at her next visit symptoms which somewhat alarmed me. She complained of headache and thirst, had a hot dry skin, a glazed tongue, and abdominal pains. She was at once taken into the hospital as an in-patient, when it became clear she was suffering from typhoid fever, and it transpired that other members of her family were similarly affected. This discovery was a relief, for I confess to entertaining the fear that the new remedy was responsible for the patient's condition. The details of this case will be given in the continuation of this article. It is sufficient to say here that she got well of the fever, and after an interval resumed the acid, and ultimately lost her goitre, which was very firm, and had resisted every other treatment continued over many months.

Although I usually commence with a small dose, half a

drachm of the half per cent. solution, it is necessary to increase it gradually, which may be carried out to the extent of two drachms, and this appears to be the limit of toleration for the drug. In smaller doses it occasionally produces slight headache and nausea, for which reasons it may require to be temporarily intermitted.

The object of conducting the treatment in the present series of cases was to determine whether fluoric acid exercised any curative influence over goitrous diseases. The result—17 recoveries and 3 failures, or 85 per cent. of the former—gives what I think may fairly be considered an affirmative answer to this point. But it will be observed from the details that the treatment extended in most of the cases over a lengthened period of time—time that might not be accorded in other than hospital patients. In endeavouring, therefore, to estimate the position of fluoric acid as an anti-goitrous remedy, I certainly should not regard it for this reason alone, irrespective of its occasional failure, as occupying the position of a specific. It is to be regarded rather as a basis of constitutional treatment, with which iron in anæmic patients may be advantageously combined; while coincidentally with its internal administration recourse may be had to such local proceedings as experience has shown to favour the dispersion of goitre. It is matter of observation that when fluoric acid is adapted to a given case, its effect upon it is often immediate and rapid. As an illustration of this point I may refer to a young man who came under treatment at my out-patient clinic for the first time on Feb. 8, 1881. He had a fibrous goitre of two years' duration, which was steadily increasing. Laterally it extended from the clavicles to the level of the hyoid bone on each side, while the isthmus was hard and prominent, the girth at this point being  $16\frac{3}{4}$  in. He was given half-drachm doses of the acid three times daily. On his next visit, Feb. 15, just one week, he volunteered the statement that the tumour had gone down half an inch, which on measurement proved to be the case. Perpendicularly the diminution was greater than this, the lobes now reaching only to the level of the cricoid cartilage. In such a case one would be content with the acid treatment. But there are others in which improvement goes on up to a certain point only, the peripheral portions of the tumour disappear, but its centre remains firm and large as ever. Then I should add the plan which originated with Professor Lücke, formerly of Berne and now of Strasbourg, and which has ever since been extensively practised at the Throat Hospital—viz., that of injecting the substance of the tumour with tincture of iodine. After this absorption recommences, and often it only requires to continue the acid, or a second injection may be necessary. The evidence points with certainty to this



fact, that when fluoric acid is administered internally, but is insufficient of itself to cure the disease, the number of injections necessary for this purpose is materially diminished, a point not unworthy of notice by those who are nervous on the subject of injecting bronchoceles. On the other hand, some of the cases indicate that fluoric acid alone has proved efficacious, after injections and every other method had failed. From all these considerations it will, I think, be conceded that we have in this drug a valuable adjunct for treating diseases of the thyroid gland.

A brief recapitulation of the points already insisted upon will serve the purpose of indicating in what the *modus operandi* of fluoric acid and its allies consists regarded from a therapeutic point of view. The vessel area of the thyroid gland has become a part of least resistance, as regards the vascular system at large. This implies a fault not so much in the bloodvessels themselves as in the sympathetic ganglia which furnish the *nervi vasorum* of these thyroid vessels; the power which maintains them in equilibrium is thus to a great extent lost or exhausted. Hence they exhibit a very slight resistance to the blood pressure originating in the heart; they yield, in fact, to the *vis a tergo* of the blood current, and so receive more blood than normally should be the case. My contention is that the fluorine restores the lost contractile function to the impoverished ganglia, either by acting as a physiological spur to their function or, which is equally admissible, by furnishing a deficient element in their composition, one without which the nerve currents generated in them are reduced to *nil*. The supply of the missing element acts like the recharging of an exhausted galvanic cell.

*Case 1.*—F. H.—, a female, aged twenty, living at Camden-town, has had goitre for two years. In November, 1876, there was a fibrous enlargement of both lobes and isthmus, the right lobe being firmest and largest. The girth of the neck was 15½ in. Till July 1877, she was treated with iron and iodide of potassium, with very little result. She was now given fifteen minims of fluoric acid (half per cent. dilution); but she almost immediately took typhoid fever. In March 1878, she was again put on the acid, and in the three months following received altogether nine injections of tincture of iodine into the substance of the tumour. From June 1878, the treatment was confined solely to the acid internally, the dose being increased gradually to thirty minims. In March 1879, she was well, the tumour having disappeared. In February 1880, she remained free from the disease. The period during which the acid was taken was nine months.

*Case 9.*—A. S.—, a female, aged eighteen, in service at Stratford. The tumour had existed two years. On December 11, 1877, presented simple goitre; girth 13¼ in. At first patient was treated with bromides, iodides, and iron for three months;

under this treatment goitre enlarged to  $13\frac{3}{4}$  in. On March 22, 1878, she was given fifteen minims of dilute fluoric acid. This in April was increased to thirty minims; swelling disappearing. On June 21 scarcely a trace of enlargement. Time of taking acid three months.

*Case 10.*—S. H—, aged twenty-six years, a laundress, living at Islington, had noticed the enlargement four years ago. In September 1877, patient presented a firm tumour the size of a tennis ball, occupying the isthmus, and a portion of the right lobe of thyroid body. There was deep-seated fluctuation, but from the thickness of the cyst-walls and extreme tenseness of the swelling this was somewhat obscure. It was diagnosed as a fibro-cystic goitre; girth of neck  $15\frac{1}{4}$  in. Wishing to test the acid in this phase of the disease, the patient was given fifteen minims in water three times daily, on September 4. On September 18 the girth was 15 in. On September 25 she was seen by an assistant, who injected the tumour with twenty minims of tincture of iodine. After this a thin clear fluid continued to ooze through the puncture made by the needle during two hours. On October 2 the girth was reduced to  $13\frac{1}{2}$  in., owing to the escape of fluid, and the contracted cyst-wall, about the size of a walnut, was distinctly to be made out. On November 20 scarcely a trace of this remained, and the patient was discharged cured. Time of treatment three months.

*Remarks.*—The above case has been already alluded to in the opening paragraph of this paper. It is unique in its way, for, though the original design of the treatment was frustrated by the inadvertent tapping as detailed, it afforded the unexpected result of a fibro-cystic goitre of considerable size and long duration recovering in three months with no other treatment than that recorded. The puncture and injection were made on the assumption that a fibrous goitre was being dealt with. The iodine could scarcely have affected the result, as, being diffused through the contained fluid of the cyst, it must have escaped immediately with it. It is opposed to general experience for a cyst so tapped not to refill. To the absorptive influence of the acid on the solid portion of the tumour, indicated by its diminution during the three weeks it was taken preceding the tapping, may with fairness be accorded the change in its character, which averted the secretion of fresh fluid, and ended in the rapid disappearance of the disease.

*Case 11.*—H. R.—, female, married, residing at Chelsea, presented a mixed goitre of one year's duration, September 7, 1877. Blistering fluid was applied to the swelling, and she was given ten minims of dilute fluoric acid three times a day. On October 5 she was so much better that she did not attend subsequently. This case was of a mild type, and illustrates the



advantage of a combination of local treatment with the fluoric acid internally.

*Case 12.*—C. K—, a female, aged twenty-eight, married, living at Old Ford, presented on March 12, 1878, a goitre of five years' duration. The right lobe was of the firm, fibrous, and the left, the soft or simple variety. On both sides the enlargement rose to the level of the hyoid bone. Girth  $14\frac{3}{8}$  in. At the above date she was given fifteen minims of dilute fluoric acid twice a day. On March 22 it was increased to twenty minims. On April 9 the girth was 14 in. On April 30 the dose was increased to thirty minims, and on May 21 to forty minims. The girth was now  $13\frac{1}{2}$  in. On May 28 the entire tumour had subsided to the normal dimensions of the gland. Time, three months.

*Case 13.*—E. B—, female, aged seventeen, on October 23, 1877, presented a small recurrent fibrous enlargement of the isthmus. She took fifteen minims of fluoric acid twice a day for three weeks, at the end of which time only a trace of the enlargement remained.

*Case 14.*—L. R—, a female, aged twenty-nine, married, living in the Waterloo-road. She had been the subject of goitre since the age of eighteen. Commenced treatment in July 1875. Came under the author's care in January 1877, having received little or no benefit from the previous treatment. The tumour was very firm and large, dipping deeply into the neck, chiefly on the right side. The pressure on the œsophagus was such that she had been unable to swallow solid food for six months. Breathing much impeded; her general health was very bad, and she was excessively weak. She took tincture of perchloride of iron and cod-liver oil up to August 1877, when a seton was passed perpendicularly through the entire length of the tumour. This was followed by a free discharge of the thin offensively smelling fluid, with very slow diminution of size, and the gland was extremely tender. This state of things continued till February 1878, when she commenced taking fifteen minim doses of dilute fluoric acid, which were shortly increased to twenty minims. On March 19 the seton was removed. There was a marked improvement in her health; she could swallow solids. The swelling was now about the size of a hen's egg, and very hard. On April 30 the dose of the acid was increased to thirty minims. The upper wound made by the seton had healed, but the lower one discharged freely. Tumour much smaller and less painful. In July she was taking fifty minims. This dose in September caused inconvenience and was reduced to thirty minims. In November there was a further diminution of the tumour and the acid was increased to forty minims. This dose at times caused gastralgia and

faintness, on which account she was directed to intermit the medicine at intervals. In June 1879, there was still some discharge, though the tumour was reduced so much that it occasioned no inconvenience. She was last seen in the spring of 1880, when a nodule about the dimensions of a filbert was all that remained. She was in robust health, and did not attend subsequently. Time of taking acid, about two years.

*Case 15.*—A. D—, youth aged fifteen years, had noticed his neck enlarging for a year previous to January 1878. He was then living in Berkshire. His mother was goitrous. The tumour extended chiefly vertically, and was of the soft variety. He commenced the acid on January 21, taking ten minims; this was followed by rapid increase, so that the growth, which was  $13\frac{1}{2}$  in., became in the course of a week  $14\frac{1}{2}$  in. He continued the acid for six months, attaining a maximum dose of forty minims. During this time the perpendicular dimensions of the swelling diminished, and the growth became normal, but the improvement was very slow. A later report, received about fifteen months from the commencement of treatment, states that the disease had nearly disappeared.

*Case 16.*—E. S—, a female, married, aged thirty-three years, living in Soho, presented in February 1878, a swelling of medium hardness in one lobe, of the size of half a walnut. She began with fifteen minims of dilute fluoric acid, which were shortly increased to thirty-five minims. There was no improvement by August; on the contrary, the growth had enlarged considerably. After this trial of eight months without benefit the acid treatment was relinquished.

*Case 17.*—E. H—, a female, aged twenty-six. Seen September 1878. The disease commenced when living in Essex, five years previously; she moved to Hackney three years since, and during this time the enlargement had much increased. She presented a fibrous goitre, chiefly of the right lobe, extending upwards and backwards. She suffered much from dyspepsia, and generally feeble health. Commenced with fifteen minims of dilute acid on September 11, and on October 9 the dose was increased to thirty minims. This dose caused sickness, and was first reduced, and then discontinued. Recommenced in January 1879, with thirty minims, which in February were increased to fifty minims. Again the sickness returned, and the medicine was discontinued finally. The failure was probably in some degree due to the irritable state of the digestive organs. The dimensions were the same as at the commencement.

*Case 18.*—A. K—, a male, aged sixteen years, living in the Strand. Seen June 1878. He presented a mixed goitre of one year's duration; girth  $14\frac{1}{2}$  in. Commencing with twenty-five minims of dilute fluoric acid, the dose was increased to sixty



minims during the ensuing five months. No improvement occurred during this time. Failed.

*Case 19.*—Mrs. A—, aged forty, was seen in consultation at the close of 1879. She had a large, firm, fibrous goitre of the entire gland of many years' duration. She was ordered to take half-drachm doses of fluoric acid in water. As she returned to the country I have not seen her since, but received from her medical attendant in October 1880, a report to the effect that the acid was taken for about six months, and that "her neck has never been so small as now during the eight years I have attended her, notwithstanding she has had iodine, &c. Had she persevered with the fluoric acid I feel sure the result would have been complete."

*Case 20.*—S. C—, aged twenty-four, housemaid (February 1880), states the enlargement has existed as long as she can remember. She lived in Essex till the age of fourteen, when she came to London, since which it has increased, especially during the last year. Her mother is goitrous. There is a fibrous goitre of isthmus and right lobe, very firm and large. February 13, commenced with twenty minims of dilute fluoric acid; February 24, increased to half drachm doses; March 2, to forty minims; March 9, to fifty minims. Goitre smaller and softer. April 6, increased to sixty minims; April 29, to seventy minims. This was continued to September, at which time careful examination revealed only a trace of thickening behind the sterno-mastoid muscle. She did not attend afterwards. Cure. —*Lancet*, March 19 and 26, and April 2, 1881, pp. 450, 497, 537.

#### 40.—ON SOME POINTS IN TRACHEOTOMY.

By Dr. DAVID FOULIS, Pathologist and Lecturer on Pathology,  
Glasgow Royal Infirmary.

In the course of my practice, I have had occasion to open the air tube twenty-three times for very varied diseases; but I will restrict my remarks here to those cases in which the *trachea* was the seat of the incision, and leave out of account nine cases in which the opening was purposely made above the cricoid cartilage. This leaves fourteen cases of tracheotomy.

First then, as to the fatality of the operation. I may say that in no case could death be traced to the operation. Six of the cases were for diphtheria; one for laryngeal phthisis; three for acute inflammation and swelling of the mucous membrane lining the larynx; three for extreme stenosis, owing to old standing laryngeal inflammation; and one for almost complete closure of the larynx by intralaryngeal papillomata in a child  $2\frac{1}{2}$  years old. Four of the cases of diphtheria died of the disease at varying periods, but with the breathing relieved and

death rendered more peaceful. Another case recovered from the immediate danger of the diphtheritic attack, so far as to permit of the removal of the tube and the closure of the wound, but sank two months after the operation from cardiac syncope, probably one of the paralytic after effects of the disease. The last of the six cases of diphtheria made a perfect recovery, the tube being removed in a fortnight. The case of laryngeal phthisis was tided over the immediate danger of suffocation, and only ended fatally a year after the operation from extension of the disease. The three cases of acute inflammation and swelling of the mucous membrane of the larynx made excellent recoveries, and were able to dispense with the tube within a month after the operation. The three cases of chronic thickening were in elderly people, and they, too, rallied well after the tracheotomy, but in them the tube continued to be worn. One of them succumbed to diabetes several months after the tracheotomy; the other two are alive and in comfort as regards the breathing. Lastly, the little boy whose larynx was occupied by intralaryngeal growths is well and strong, and though the tube is still in (one year after the operation), I have been able to remove a number of the papillomata from the larynx, and there is a fair prospect of our being able to dispense with the tube soon.

I have thought it right to mention briefly the cases which, owing to the kindness of medical friends, have been sent to me; but of course I do not bring forward the statistics of so small a number of cases from any belief in their novelty or importance, but rather to show that my remarks have at all events a certain basis of observation.

The first point to which I would draw attention is the size of the tube to be used at different ages. This is particularly important in the operation on very young children, but is not beneath attention even in adults. The youngest patient on my list was a female child, aged 6 months, who, four days before I saw her, had "caught cold." The symptoms at first were very slight, but a certain amount of dyspnoea set in, and gradually increased to such an extent as to alarm her attendants. Active treatment by calomel and tartar emetic and local blood-letting failing to give relief, I was asked to perform tracheotomy. When I saw the child (10 p.m., 11th November, 1879), it was in an agonizing state of dyspnoea; the skin was pale and clammy, the lips pale blue in tint; at each inspiration the eyebrows rose and the forehead wrinkled, and the supraclavicular and lateral costal regions sank in; while the noisy inspiration and expiration indicated advanced stenosis of the larynx. There was no membrane on the fauces, nor any suspicion of diphtheria; and the



diagnosis of simple acute laryngitis appeared to be quite clear. No time was to be lost, as the child was fast becoming exhausted, and, therefore, Dr. Lothian put her under the influence of chloroform, and I cut down on the trachea. At this early age the trachea is a very small and soft tube, not easily distinguishable by the finger, so delicate are its rings; and the larynx, too, is soft and yielding. I therefore selected the most resistant point of the air tube as my guide—namely, the cricoid ring, which gave me a clear clue to the position of the upper end of the trachea. Exposing this, I divided the first four rings, and, of course, the isthmus of the thyroid gland. Then arose the doubt as to the propriety of putting in the smallest tracheal tube which I had been able to procure. Some observations of my own, and the published measurements of M. Marc Sée had taught me that the diameter of the trachea at birth is not more than 4 mm. or 5 mm., and that for several months after birth this size is not much altered. Now, my smallest tube measured 5 mm. external diameter at the point. This would have completely filled the trachea, and, I thought, might cause erosion if the tube were to remain in for any time. I contented myself with the introduction of the smaller inner tube, the diameter of which was 4 mm.; and, as soon as possible, I had a tube made by a silversmith, with an outside diameter of 4 mm. This new tube was made of equal diameter throughout, of solid silver, and very plain pattern. At the suggestion of the patient's father, the inner tube was made to project a little at the front, in order to facilitate its removal for cleaning; and all loops and hooks were omitted. I was delighted with this tube; it was easily worked, and to the nurse and mother of the patient it presented not the least difficulty. The diameter of the inner tube, small as it was—3 mm.—gave ample room for respiration; and the recovery of the child went on uninterruptedly. Thirty-two days after the operation the tube was finally removed, and the small wound allowed to heal. Unfortunately, about ten days after the wound had healed up, the baby caught cold again, pneumonia set in, and, in a few days, she died; but the operation may be fairly claimed as quite successful.

In March 1880, another case of simple acute laryngitis in a female child, æt. 17 months, with excessive dyspnoea, occurred in the practice of Dr. John Wilson, who asked me to see her. We decided on tracheotomy, which I performed in the same way as in the other case, my incision passing through the isthmus of the thyroid gland. The same 4 mm. tube was used, and the patient made an excellent recovery, ample breathing space being given by the 3 mm. lumen of the inner tube. Following up the idea of carefully adapting the size of the tube to the

individual case, I have had a set of five silver tubes made, graduated according to the measurements of the trachea at different ages, so that one may be able to select, without hesitation, a tube which is sure to fit the individual case, from birth onwards to adult age. I say from birth onwards, for a case of an unusually interesting kind has come under my notice, in which the propriety of tracheotomy at this early age has been seriously discussed. This was the case of a newly born male child, which succumbed to laryngismus a few hours after birth. Every sort of sedative treatment was tried, and failed: and the question of tracheotomy was raised only to be negatived. But, bearing in view the facts that three children of the same parents had previously succumbed to laryngismus shortly after birth, and that a *post-mortem* examination of the child which I attended failed to reveal any disease or abnormality of the larynx, we have agreed that, in the event of another delivery being followed by laryngismus in the child, the apparently severe measure of tracheotomy is not to be shirked, and to this the parents have given their approval. The success of the operation in the child æt. 6 months (above detailed) leads me to think that a favourable result may be got even in the newly born.

The curve of the tubes is a wide one, in order to avoid that ulceration of the anterior wall of the trachea which often follows the use of the ordinary over-curved tubes. These tubes are sold by W. B. Hilliard and Sons, 65, Renfield Street.

Another interesting detail in performing tracheotomy is the exact seat of election for the opening in the windpipe. In books we have a tradition handed down informing us that the windpipe may be opened either *above or below* the isthmus of the thyroid gland; and hemorrhage is alluded to as an event to be dreaded if the isthmus be cut. but some of the best authorities (Erichsen, Bryant, and others), while still advising us to leave the isthmus alone if possible, say that it may be cut without scruple when necessary. And it is not difficult to understand why this should be done; for in the isthmus in the middle line there are no blood-vessels, just as in the tongue or in the perineum the middle line is devoid of vessels of more than capillary size. Hyrtl failed to inject the one side of the thyroid from the other through the isthmus. It is quite true, indeed, that the thyroid arteries, ramifying outside the capsule of the thyroid body send small branches across the trachea to anastomose with those of the opposite side, but these vessels are quite outside of the isthmus, and do not belong to it. In many cases, especially in young children, and people with short necks, the space between the cricoid and the isthmus is so very small that no tube could be got in without dis-



lodging the isthmus or incising the cricoid, and as a matter of fact, I believe the isthmus is often cut unawares in children. But in the fear of the isthmus, which young and even more experienced surgeons are imbued with, serious mistakes are made. I have been called twice to make *post-mortem* examinations of children dying of diphtheria, in whom the so-called high operation has been done by surgeons who certainly could not be called quite inexperienced. In one of these cases the tube was pushed into the larynx at the base of the epiglottis; and in the other it had gone into the pouch of Morgagni. On the other hand, by going too low down, we come into serious dangers. The thick plexus of thyroid veins; the occasional thyroidea ima; and even the innominate itself may give trouble: while the bulky thymus in children, though not dangerous to cut, comes more or less in the way. It occurred to me, therefore, after doing one or two tracheotomies, and after carefully dissecting the parts in a number of bodies at various ages, both injected and uninjected, to *select the isthmus* as the safest seat of the incision. To this I was the more impelled by watching the results of cutting the cricoid cartilage. It does not answer to cut the cricoid, for there is so much spring in the ring of the cricoid that the tube cannot be worn without a constant irritation, it may be unfelt, but steadily leading to perichondritis and necrosis of parts of the cartilage. Twice I have tried to obviate this by *removing* a piece of the cricoid in cases where it was intended to wear the tube permanently: and this proved very successful. But, in merely splitting the cricoid, the result is not good if a tube is to be worn even for a week or two. In another case, that of a female, æt. 34, with acute infraglottic oedema, under the care of Dr. Sloan, I performed the low operation, but during it I had so much profuse hemorrhage from the thyroid plexus of veins that I resolved to go higher up, and incised through the isthmus, with the best results. In the last five or six cases I have cut through the isthmus with the knife, and have had reason to be well satisfied with the easy access to the trachea and absence of hemorrhage during the operation. Any hemorrhage which is met with at this part of the air tube is from small arterial vessels which are readily secured by ligature or pressure forceps, and that gushing of blood from large and swollen veins in the thyroid plexus is avoided. The trachea is near the surface, and we have the useful guide of the firm resistant ring of the cricoid at the upper end of our incision, which, in very young children especially, is of considerable value.

The incision in the skin may reach from the level of the cricothyroid membrane to a point half way towards the supra-

sternal notch ; and, in dissecting deeper, it is wise to use two pairs of dissecting forceps, one of which is held by the operator, and the other by the assistant ; so that, with these, the tissue to be cut is steadily held on both sides before each cut is made. Vessels are secured as they appear. Keeping in the middle line, the isthmus may be cut and the trachea exposed and, all bleeding being stopped, incised either with or without the aid of a hook to steady it. In inserting the tube, the point of the dissecting forceps is placed in the cut in the trachea, and the tube pushed along between the blades which open the trachea as the tube advances. No complicated instruments are needed, nor split tubes. A thin tenotomy knife, several artery compressors, a sharp hook, and two pairs of dissecting forceps are all the necessary instruments.

The tube once in, the after treatment is easy. No steaming is needed. If a single layer of dry gauze is loosely thrown over the face and neck, the air will be kept warm and moist enough for all purposes. It cannot be a good thing for a patient to have a chill fog playing over an open tracheotomy wound ; and this is what happens when steam is blown even out of a hot kettle into the air over the patient. I prefer to have the patient near the fire, out of draughts, but with abundance of fresh air ; and, therefore, without any tent or blankets over the bed.

One other detail I may mention, rather in explanation than as belonging to the operative procedure.

It may perhaps have been remarked that I have not used the word *croup* as applying to any of my cases. I have avoided it purposely ; for it appears to me that the word *croup* is applicable to a symptom rather than to a disease or a pathological condition. Croup, so far as I can discover, means a hoarse cough with difficulty of respiration : and as this symptom may be caused by a variety of pathological conditions, I have preferred to state what in my opinion was the disease in each case. It seems to me to resemble very much the use of the word *cough*, which may be a symptom of several diseases ; and just as we talk of pneumonia, bronchitis, &c., &c., all of which may cause cough, so we may talk of diphtheria, acute simple laryngitis, &c., &c., which may give rise to croup. That there is any one distinct disease to which the word *croup* can be fairly limited I do not believe ; for, on the *post-mortem* table, according to my experience and reading, it always resolves itself into one or other of well recognised pathological conditions of the air tube. It is a useful word in a *clinical* sense, however, just as the word *cough* is also.—*Glasgow Medical Journal*, Feb. 1881, p. 119.



## 41.—MALIGNANT DISEASE OF LABIUM—OPERATION WITH THERMO-CAUTERY.

Mrs. M'G., aged 69, was admitted into Dr. Leishman's wards, Western Infirmary, Glasgow, on 16th August, with a large epithelioma of the right labium. She complained of pain in the right iliac region and of foetid discharge from the tumour.

24th August. To-day, while patient was under the influence of chloroform, Dr. W. L. Reid removed the whole of the right labium by means of the thermo-cautery, going some distance beyond the diseased tissues. No knife or other cutting instrument was used, but the cautery kept at a dull red heat, and it was found to answer the purpose remarkably well. Several vessels required to be ligatured during the operation, but the hemorrhage was only slight. The parts were well syringed with carbolic acid, the lower part of the wound brought together with silver sutures, and carbolic oil dressings applied.

The catheter required to be used only during the first twenty-four hours after the operation. Little or no pain was complained of. On the second day the sutures gave way, and a granulating surface, as large as the palm of the hand, was left; as this healed it gradually contracted till, on September 21, when patient left, it was much less than half the original size, and, though still of considerable extent, it had a healthy appearance with a healing margin. No trace of cancerous tissue was observable.

Patient was again seen on 1st October, when the surface was found to be almost entirely healed, only a minute point being still left. The cicatrix was remarkably small considering the size of the original wound. She expressed herself as free from pain and discomfort, and there was no discharge.

*Remarks.*—In this case the disease, reaching as it did some way up the vagina, would have been considered beyond the reach of operation with the knife. The patient did not suffer as the result of the operation, and is now free from pain, so that one would not regret having operated even although the disease should recur.—*Glasgow Med. Jour.*, Dec. 1880, p. 505.

## DISEASES OF THE NERVES.

## 42.—ON THE MULTIPLE NEUROMA.

By Dr. T. MITCHELL PRUDDEN, New York.

Dr. Prudden records in the American Journal of the Medical Sciences, July 1880, a new case of multiple neuroma, and gives a brief summary of the cases hitherto discussed. In the case described by Dr. Prudden, the patient, a female, aged 25, died after a sudden and brief attack of diarrhoea. The whole num-

ber of tumours counted after death, exclusive of those in the right leg and the left arm, which parts were not examined, was 1,152. The tumours varied from the size of a pin's head to that of a hen's egg. On the removal of the heart and lungs, a series of small whitish tumours was seen scattered, at short intervals, along each side of the spinal column and along the intercostal spaces; the pleura was bulged out here and there toward the thoracic cavity by numerous larger and smaller tumours lying between the ribs. There was a large mass on the right iliac fossa, made up of a congeries of larger and smaller tumours. There was no change in the spinal cord: no tumours were found either on the meninges or on the roots of the spinal nerves. Tumours were found on the optic, supra-orbital, infra-orbital, gustatory, buccal, supramaxillary, hypoglossal, and vagi nerves. The sympathetic of the right side was also the seat of excessive changes. In the deep cardiac plexus all the nerves were enlarged, as were the branches coming from the pneumo-gastric, and were thickly beset with irregularly shaped tumours varying much in size. The nerves of the extremities, which were fully examined, save in the right leg and left arm, were thickened throughout almost their entire extent, and were the seat of most extensive formation of tumours. In many places, especially in the thighs, the subcutaneous tumours were so abundant as to form a dense mass, almost concealing the muscles beneath.

In some places the tumours presented themselves in the form of more or less symmetrical, usually fusiform, enlargements of the nerve. In other places a portion of the nerve was seen passing, without enlargement, over the surface of the tumour, to which it was often closely bound by connective tissue. Each tumour was enclosed in a distinct capsule, which was sometimes loose and thin, sometimes dense and thick, and which, in many instances, seemed to be a direct continuation of the lamellar sheath and circumvascular connective tissue. In some places the tumours were arranged along the nerves, at irregular intervals, like beads upon a string; in others, they were crowded closely together. In the larger and more complete nerve-trunks, such as the sciatics, the entire cord was surrounded by a distinct sheath, within which were contained masses of tumours attached to the different groups of nerves, each in turn being enclosed by distinct connective tissue membranes, of varying thickness, serving as partitions between the different tumours and nerve cords. In no case was a tumour found to which, on careful examination, a nerve-fibre could not be found attached.

Dr. Prudden gives the following brief summary of this, together with thirty-nine other cases, collected from various



sources. "In twenty-four of the thirty-two cases in which the sex is recorded, the patients were males. The average age, at the time of death, was thirty-four. The duration of the disease is difficult to determine, on account of the entire absence of symptoms, in many cases, at early stages of the disease. In some cases the tumours were observed at a very early age, and in others the disease was unquestionably congenital. The association of the specific nerve-lesion with neuroses and malformations is worthy of remark. In two cases the patients were cretins, in one the patient was an idiot ; two are recorded as of weak intellect. In two cases, the lesion was associated with elephantiasis. The clinical history is most remarkable in the variety and lack of uniformity of the symptoms, and the marked discrepancy between these and the anatomical lesion in many of the cases. In the twenty-six cases in which a fairly complete account of the symptoms has been preserved, twelve presented no symptoms whatever pointing to lesions in the nervous system. In the remaining fourteen, a greater or less degree of paralysis was present in eight, more or less pain was experienced in thirteen, and this of the most varied character ; being sometimes spontaneous, sometimes occurring only with pressure on the tumours, and being influenced, in some instances, by atmospheric changes. Diminution of cutaneous sensibility was observed in four cases, convulsive movement in four, abnormality in respiration in four, palpitation in only one. Headache was a prominent symptom in seven cases. Diarrhoea occurred towards the end of life in three cases, contributing to or inducing the condition of debility in which many of the subjects of these cases died. Tumours were found in the brain in two cases, and in the spinal cord in four other cases. In twenty-seven cases most of the peripheral nerves were affected, and in ten cases the tumours were confined to special groups of nerves. The pneumogastric nerves were affected to a greater or less degree, sometimes excessively so, in seventeen cases. In three only of these cases were symptoms of disturbed respiration noted."

The subjects of neuroma, so far as the records show, as a rule, bear operative interference badly. In some cases, the remaining tumours grew more rapidly after operation ; in others the wounds healed slowly ; in some the patients died from exhaustion ; and in one case death resulted from pyæmia. The spinal nerves usually remain unaffected, but there are exceptions. The lesion of the nerves does not, in the majority of cases, extend to the hands and feet. So far as the diagnosis is concerned, it will be seen from the above analysis, that it is at best uncertain and difficult. Pain, which is a frequent accompaniment of the simple neuroma, is here frequently quite absent,

and when it does occur, is often not definitely localised. There may also be the most perfect control of muscular movement, though enormous changes have occurred in both cerebral and peripheral nerve-trunks. Numerous hard and soft tumours, in different parts of the body, along the nerve trunks, ovoidal or fusiform in shape, not attached to the skin, and movable transversely, but not longitudinally, whether painful or not, may justly give rise to a suspicion of the existence of this disease. The galvano-puncture, as a possible means of diagnosis, is to be borne in mind.—*London Medical Record*, Nov. 15, 1880, p. 435.

---

ORGANS OF CIRCULATION.

---

43.—A CASE OF ANEURISM OF THE AORTA TREATED BY GALVANO-PUNCTURE.

By Dr. WILLIAM M. ORD, Physician to St. Thomas's Hospital.

[The following is an interesting case of aneurism of the aorta treated by galvano-puncture:]

N. K—presented a pulsating bulge extending vertically from the third to the fifth right costal cartilage, horizontally three inches and a half from the sternum. The bulge and pulsation were most marked in the third interspace, and the whole area was dull on percussion. There was a systolic thrill. Over the bulge in front, and at the corresponding point on the back of the chest, a well-marked double murmur, systolic and diastolic, was heard; the impulse of the heart was not felt distinctly at the usual point, but was strongest at the left side of the xiphoid cartilage. Over the proper site of the apex the first sound was reduplicated, without murmur; with the diastole was heard a soft murmur, apparently conducted from the aortic orifice, in addition to the normal diastolic thud-sound. The left lung was evidently emphysematous; the right was as evidently compressed by the tumour, percussion-resonance being diminished over its upper half, the respiratory sounds being harsh, almost tubular, and vocal resonance being exaggerated. The pulse had the collapsing character belonging to aortic regurgitation, and was of equal volume at the two wrists; there was no paroxysmal dyspnoea; no dysphagia; no alteration of voice, or inequality of pupils; much shortness of breath on exertion. The urine contained neither albumen nor sugar. Under rest and partial restriction of diet he again improved and went out. In December 1877, he was admitted for the third time. The tumour had then increased very considerably, the projection reaching up to the first interspace, the skin being tightly stretched over it, without adhering, however, at any point. It was evident on manipulation that the walls



of the sac, as well as the skin, were greatly attenuated, and that the tumour contained no clot on its anterior aspect. In face of this continuous progress of the aneurism towards the surface, resort was had to galvano-puncture, with the hope of producing some protective coagulation within the sac. My colleague, Mr. Mason, was good enough to take charge of the operation, which was performed on the 3rd January, 1878. A Stohrer's battery of forty cells was used as the source of electricity. To the negative electrode two needles were attached by separate wires provided with clamps, allowing of the ready connection and disconnection of the needles. The needles were such as are used in harelip operations. They were thickly sheathed to within three-quarters of an inch of their points with sealing-wax carefully polished. One was thrust in near the axillary border of the tumour, the other on the sternal side, two and a half inches distant, on the same level. The circuit was completed by bringing into contact with the skin over the tumour a moistened sponge connected by wire with the positive electrode. Six cells were used at first, and the sponge was applied at the upper border of the tumour, equidistant from the two needles.

At the end of three minutes the patient complained of "pricking" at the punctures and "inside."

At five minutes the "pricking" continued; ten cells were used.

At nine and a half minutes the sensations had become of a "burning" character.

At ten minutes the sponge was shifted to the external side of the tumour, and twelve cells were turned on. The needles had hitherto both moved freely with respiration and pulsation, but now the movement of the sternal needle decreased a great deal.

At twenty minutes, the sponge being moved to the axillary border, the axillary needle moved less freely, the sternal more freely.

At thirty minutes the sponge was moved to the hepatic border, and twenty cells turned on. This caused so much distress in the way of burning pain that the number was reduced to eighteen. Soon afterwards the discomfort at the punctures decreased and almost disappeared, the sponge, on the other hand, giving rise to much complaint.

At forty-five minutes a blueish areola, about one-sixth of an inch in diameter, appeared around each needle, and the tumour showed an acuminate projection at each point. Small bubbles gathered around the needles, frothing up from their tracks. Cauterisation was taking place at the punctures. The axillary needle being partly withdrawn was found to be denuded of its insulating material.

At fifty-six minutes the areolæ were of a pale grey colour, and the cuticle was loosened. The needles were now withdrawn. As each was carefully pulled out a little open passage was left, through which fine jets of dark blood issued. Each orifice was lightly closed by shallow transfixion with a harelip pin, and covered with collodion and cotton wool. During the withdrawal the current was maintained in the hope of searing the surfaces and preventing bleeding.

After the operation the tumour was reduced in size and firmer to the touch. It felt as though it were thickly padded within. The pins were removed next day without hemorrhage. At the end of a fortnight the little superficial sloughs which had formed around the needles came away, leaving granular surfaces. One of these healed about sixteen days later; the other remained covered with a scab at the time of the patient's death. The further progress of the tumour was most satisfactory. It became steadily firmer and smaller, the latter point being made clear by measurements. On the day of the operation it measured 7 inches vertically,  $7\frac{1}{2}$  transversely; on the sixteenth day afterwards 6 inches vertically,  $6\frac{3}{4}$  transversely. The patient had neither fever nor suffering, and seemed to be doing well, when on the 30th of January (twenty-sixth day) he had a rigor, pain over the heart, and a sudden access of febrility. The acuteness of these symptoms lasted only a few hours, but from this time the patient lost strength, became irritable, and was much distressed by pain in the right arm whenever, as was mostly the case, he lay inclined to the right side. On the 18th signs of blocking of the innominate artery appeared, and the patient died on the 22nd of February, forty-nine days after the operation.

The body was examined next day by Dr. Greenfield, whose notes are appended.

"The aneurism commenced at the valve with a general dilatation of the aorta, extending to the origin of the left carotid. The bulge was chiefly to the right, and at about three inches from the valve a second bulge, defined by an hour-glass constriction from the dilatation, formed the sac which projected as above described; the constriction was on the upper aspect two inches below the origin of the innominate artery. The transverse diameter of the entire dilatation was six and a half inches, the vertical five and a quarter inches.

"On opening the sac the projecting part, which had been the seat of operation, was found thickly lined at its outer aspect, less thickly at its middle, and scarcely at all on its inmost circumference, by clot. The clot was firm and stratified externally, very soft and friable internally; and it showed greater thickness and density at and around



the punctures. The thin inner wall seen in the preparation represents what was, as far as could be made out, the condition of the whole sac before the operation. The axillary artery, and the commencement of the right carotid and subclavian, were blocked by clot; from the mouth of the innominate a little boss of soft fresh clot projected into the sac."

*Remarks.*—1. As concerns the general result of the operation, we—Mr. Mason and I—may claim to have attained the objects proposed, namely, of producing a coagulum within the sac, of diminishing, through the subsequent contraction of the clot, the bulk of the tumour, and of arresting, so far, its dangerous pressure upon surrounding parts.

2. The preparation exhibited shows, we represent, much progress in the consolidation of the clot, and warrants the belief that by further operations the projecting sac might have been completely filled up. The preparation also shows the thin-walled globular diverticulum to have been just such a form as is generally held to be suitable for the operation practised.

3. The death was apparently due to the shock, &c., following the obstruction of the innominate artery. The examination of the artery leads to the conclusion that the obstruction was by thrombosis, the walls of the artery and its main branches being much degenerated, and the contained clot being recent and adherent. Even had the obstruction been by embolism, the occurrence could hardly be held to be an indication unfavorable to the operation, ligature of that artery being now recognised as a mode of treatment in aneurisms of the kind existing in this case. The thrombosis was probably due to change in the coats of the artery, produced by the constant pressure upon it involved by the position almost exclusively maintained by the patient—the position which in the main was most easy and restful.

4. As regards the details of the operation, it may be stated that no anæsthetic was used. The coating of the needles, for which I was responsible, was decidedly inefficient. On any subsequent occasion I should use the needles insulated by vulcanite, recommended by Dr. Duncan (*Treatment of Aneurism by Electrolysis*, by John Duncan, M.D., &c., 1867; with an *Account of an Investigation into the Action of Galvanism on Blood and on Albuminous Fluids*, by Thomas R. Fraser, M.D., &c.). Dr. Duncan, after many experiments, found this to be the only available material which was not destroyed in the operation.

5. We inserted the needles attached to the negative pole in the hope of obtaining a voluminous clot, being much impressed with the reasoning of Dr. Althaus on this subject; and we

kept the positive pole free and movable, in order to effect wide distribution of the clot. It is noteworthy that bubbles of gas formed around the needles as bubbles form round the negative pole in experiments outside the body. The patient was not, however, conscious, as has sometimes been the case, of any sensation of bubbling within the sac. The cauterisation of the skin around the needles indicated, of course, the failure of the insulation. The sloughs produced were superficial, but it must be confessed that they gave rise to much anxiety until they separated, leaving clear granulating surfaces beneath. The skin over the tumour also rose in blisters at every point to which the sponge had been applied.—*St. Thomas's Hospital Reports*, vol. x., 1880, p. 104.

---

#### 44.—ANEURISM TREATED BY THE USE OF THE CATGUT LIGATURE.

By RICHARD BARWELL, Esq., F.R.C.S., Senior Surgeon to the Charing-Cross Hospital.

[This and the succeeding article are comments on two papers read at a meeting of the Royal Medical and Chirurgical Society, by Mr. Frederick Treves and Mr. Jeremiah MacCarthy, on Feb. 8, illustrative of the inefficiency of the catgut ligature to produce permanent occlusion of arteries tied in their continuity. The main contention was, that under antiseptics the changes around the vessels are too slight and temporary to aid in the occluding process. Mr. Barwell says:]

The results of the cases whose history was read at the Medico-Chirurgical Society are so important that I think some review of them is necessary in the interests of surgery. The President (Mr. Erichsen) said that the condition of artery revealed by *post-mortem* examination was unknown to him, and other speakers, myself among the number, proffered similar opinions. My remarks, however, indicated that I intended to devote further study to the subject, having at the time a suspicion, awaiting investigation, as to the reason of the non-closure in the lumina of the vessels.

This suspicion was awakened by the absence of clot, above or below the ligature, in either Mr. Adams's or Mr. MacCarthy's case. In studying the subject it is to be observed that although there were but two patients, yet there are three cases—(1) the right carotid, tied by Mr. Adams; (2) the right subclavian of the same patient, tied by Mr. Treves; (3) the left subclavian, tied by Mr. MacCarthy. In Mr. Treves's deligation considerable suppuration took place; and the vessel is the only one of the three which exhibited perfect closure, the operator attributing the difference between the result of his operation and of the



previous one by Mr. Adams to the inflammation and thickening which took place around the artery which he had tied. The wound over the carotid (Mr. Adams's) had not inflamed.

There is, however, another factor. So many vessels have now been tied successfully while asepticism has been maintained that we can hardly go back upon that improvement and consider it a detriment. We must think of other matters, and more especially the singular absence of clot. Now, if the carotid artery tied by Mr. Adams, or the left subclavian tied by Mr. MacCarthy, had really been closed by the ligature (even though none of the tunics were divided), and if those vessels had remained occluded, as clinically appeared, in the one case for thirty-six days, and in the other for forty-one days, clot would have formed above and below the ligature, and would in that time have become so adherent that no restoration of passage could have been possible.

The condition must then, I think, be otherwise explained. Mr. Adams tied the carotid thus: "A stout catgut ligature was used and tied in a double, and then a single hitch." Mr. MacCarthy kindly answered a question I addressed to him by letter thus: "The ligature was tied with a double hitch, and then a single one, only differing from the ordinary knot by the doubling of the first hitch." Therefore, out of the three cases the only one which was tied by a single hitch repeated was Mr. Treves's operation on the right subclavian, and it was the only one which succeeded in occluding the artery.

If a piece of prepared catgut be drawn through the fingers, it will rarely be found to be smooth, but to be roughened by little asperities studded over the surface. These are not sufficient to obstruct in a knot made with single hitch. As soon as I came home from the meeting specified, I tied, with double hitch, a number of knots round different arteries, and I found that these roughnesses sufficed in the intensified friction thus produced to render the tightening of the first knot difficult and even uncertain. In one or two instances the sense to my hand was that of having tied the experimental object tightly, the loop being afterwards found evidently lax.

This, however, is only the hypothetical explanation; the fact remains that two out of the three cases were tied with the double hitch, and in those two occlusion either did not take place or was very transitory.—*Lancet*, March 5, 1881, p. 395.

#### 45.—ANEURISM TREATED BY THE CATGUT LIGATURE.

By W. SPENCER WATSON, Esq.

[Commenting on the same cases as the preceding article, Mr. Spencer Watson remarks:]

That an artery may be temporarily occluded by the use of the catgut ligature, and may then again become pervious, is the main point demonstrated by Messrs. Treves and MacCarthy's cases. The inference, however, as to the bearing of this fact upon the treatment of aneurism should be, I venture to think, somewhat different from that drawn by the writers of the papers alluded to, and by the speakers on those papers. To them the temporary nature of the occlusion (even though in Mr. Treves's case the period of occlusion was eighteen days) seemed an argument of overwhelming force against the use of the catgut ligature in such cases. To them it seemed an essential point in the treatment of aneurism by the ligature that the artery ligatured should be obliterated. But is this so in all cases? Does not Mr. Treves's case present an instance in the opposite direction? The aneurism for which the ligatures were used was cured, though the carotid afterwards became pervious. Still I am willing to allow that in cases of distal ligature we should aim at the absolute obliteration of the artery ligatured. It is, however, an open question whether in the cases requiring proximal ligatures the temporary nature of the occlusion is a fatal objection. That aneurism can be successfully dealt with by temporary obstruction of the channel of the artery on its proximal side has been proved by the many recorded cases of cure of aneurism by digital or mechanical pressure, kept up perhaps for six, eight, ten, or twelve hours. Why, then, should not *ligature-pressure* be as effectual? Have we not in the catgut ligature a means of employing temporary pressure, with as little risk to the patient, as by digital or mechanical pressure? If we could always ensure primary union of the wound by employing antiseptic dressings there is no doubt that the answer would be in the affirmative. Nevertheless, the increased probability of our getting primary union when the catgut ligature and antiseptic dressing are used makes this method a very much safer one than that of the hitherto orthodox plans. So that when digital or mechanical pressure cannot be used or has failed, we have the comparatively safe method of *ligature-pressure* to fall back upon. And in the term *ligature-pressure* I would include the plan of passing a catgut ligature round the artery without necessarily cutting through its two inner coats; the object being simply to bring together the inner surfaces of its channel and to retain them for a certain number of days in such apposition. I adopted this method successfully in a case of femoral aneurism—*ligature-pressure* by means of a catgut ligature was employed around the external iliac artery. Though the wound did not heal by the first intention there was no accident following the operation, and the aneurism was completely cured.—*Lancet*, March 5, 1881, p. 395.



46.—FURTHER RESEARCHES ON THE ETHYLATE OF SODIUM  
IN THE TREATMENT OF NÆVUS AND OTHER  
FORMS OF DISEASE.

By Dr. BENJAMIN WARD RICHARDSON, F.R.S., &c.

The introduction of sodium ethylate, like that of amyl nitrite, into the practice of medicine and surgery, was due to the researches on the amyls, ethyls, and alcohols, which I had the honour to carry out for my reports to the British Association for the Advancement of Science between the years 1863 and 1871. In observing the action of the more ordinary form of alcohol—the ethylic—on the blood and the tissues, it occurred to me to inquire what difference of action would occur if an alcohol was used in which sodium or potassium takes the place of the remaining atom of hydrogen which belongs to the water molecule present in the alcohols—that is to say, what would be the action of ethylic alcohol if the radical ethyl which replaces one of the hydrogens of the water was united with a metal like sodium or potassium, instead of hydrogen? The ethylates of sodium and potassium, sodium and potassium alcohols, were at that time well known as chemical substances; but they had not been used as medicinal agents, nor had their employment as remedies been suggested. It struck me, however, that they might come in as serviceable caustics, and at the same time as antiseptics.

To test their value in the last-named direction—I mean as antiseptics—I brought them into contact with fresh brain-substance taken from the newly-killed sheep, and found that they powerfully preserved the structure. I also noticed that when they were placed in contact with animal structures they were rapidly decomposed; they were oxidised. Soda or potash was produced, and absolute alcohol was reproduced. When the ethylate thus employed was a concentrated solution, or when it was used in the form of crystal, the effect of the produced alkali was to maintain the softness or the fluidity of the structure acted upon. When the ethylate was much diluted with alcohol the effect was different; then the alcohol acted as an agent for producing rapid coagulation of the albuminous or fibrinous substance. This observation, which at first sight may appear of minor moment, turns out to be of considerable importance when the details of practice, in connection with the ethylates, are under consideration—a fact which will be better seen further on.

The result of my experimental inquiry was to indicate that in the ethylates of sodium or potassium we had a substance which, brought into contact with colloidal tissue, would be decomposed into an active caustic in the nascent state, and

into alcohol which, in the same state and at the same time, became an antiseptic, a styptic, and a pectiniser, or producer of coagulation.

Extending the inquiry to newly-drawn blood, I learned that by concentration of the ethylates I could hold the blood fluid, while by diluting them with alcohol I could cause immediate and firm coagulation. I learned, moreover, that I could change the character of the red corpuscle in the most determinate manner; that the corpuscle could be made to pass into a complete crystalline form by a strong solution; while by dilution it could be simply shrunk into a very minute and contracted condition.

The facts ultimately led me to think of applying the ethylates to living tissues as a method for removing vascular growths. I reasoned that when an ethylate was applied to a vascular growth the metal—sodium or potassium—would be oxidised and become a powerful caustic, while at the same time the alcohol that was reformed would fix the destroyed matter and the blood by the process of coagulation, and would at the same time prevent decomposition.

The choice of sodium or potassium alcohol was now before me, and ultimately I selected the sodium as the best for all practical purposes of the ordinary kind. The reason for this selection was based on the following experience:—My friend, Mr. Lord of Hampstead, had a patient who was suffering from three large vascular growths on the scalp, and in consultation with him I proposed to destroy one of these growths by means of potassium ethylate. The suggestion was adopted, and the destruction of the growth for the time was effective. The hemorrhage which occurred was, however, so profuse and was checked with so much difficulty, that I determined in treating the other tumours to use the sodium ethylate preferentially. This acted well, and the destruction of tissue was accomplished without any trouble from loss of blood. The growths, in the end, assumed the malignant character, and the patient sank from the extension of the disease. The experience of the difference of action of the two salts, in respect to bleeding in this case, led me to propose the sodium ethylate as the safest, if not the most active, compound. It was in the first part of these inquiries that I used the ethylate of sodium with so much success in the treatment of a case of intractable nævus that had been under the care of my friend Mr. Gay. Mr. Gay was good enough to place that patient entirely under my charge and the recovery was perfect. As the Society is aware, a good many years elapsed before the employment of the ethylate came again under professional notice, through the admirable paper read before the Society, on the Treatment of Nævus, by



our able colleague, Dr. John Brunton. From one occupation or another, the clinical use of the ethylate had, except on special occasions, passed out of my thoughts, until Dr. Brunton's labours revived it. Since then I have been more attentive to it, and have gained some further experience, which may, I hope, be useful to relate.

In the treatment of vascular nævus (cutaneous) I have had since my last report nine cases, each of which has done well. They have all been in children, and some of them have been cases in which other modes of treatment had, previously, been tried. It may be well to give a brief review of these cases in order.

The first was an instance of the common form of nævus on the scalp in an infant three months old. After perfect recovery from vaccination, the treatment commenced in the usual way by the application of the ethylate over the growth, by means of the glass-rod. The nævus was small, not larger than a fair-sized hazel nut. The first application caused a dense scale to form, which was loose and removable on the fifth day. The ethylate was then reapplied, and five days later, when the new scale was removed, the nævus was reduced to the size of a small bean. It remained in this state during three further applications of the ethylate, being much longer under treatment than I had expected after the second application. On the seventh application it was nearly removed, and one additional touch a fortnight later completely removed it. No constitutional symptoms interfered with the course of the treatment, and no scar remained.

In the next example the treatment was almost identical both in respect to mode and to result; but as the patient was very restive and screamed extremely when the ethylate was applied, advantage was taken to make the application when the infant was in a deep sleep. The plan succeeded so well that I venture to suggest its general adoption in young children whenever the nævus is in a situation where it can be easily got at, and whenever an intelligent nurse or parent can be taught to make use of the solution in a safe and efficient manner. In the case in question the nævus was quite removed in the course of six weeks, and it can scarcely be said that any pain at all was inflicted. No scar has been left.

The third illustration was not so favourable as the two above named, although in the end the patient did well. The nævus, again on the scalp, was near to the anterior fontanelle, the fontanelle itself being large. A cerebral pulsation, distinctly marked, extended to the nævus itself. I judged at first that there was a communication from the external nævus to another vascular enlargement within the cranial arch, but this turned

out to be incorrect. The child was eight months old, was pale and feeble, with a large head. The nævus originally was of the size of a small walnut, and very prominent. The first application of the ethylate gave rise to a large and firm scale of the usual kind, which was removable on the fifth day. The second application caused a great deal of pain, and the crust which formed remained for a week immovable. When the crust was at last loosened and lifted up, the nævus was found to be reduced in size, but excessively red and vascular. It was freely treated with the ethylate, and again a dense and firm crust resulted. Four days after this the crust was quite firm, and on the eighth day, as the crust was still immovable by the ordinary method of lifting it up with forceps, I, forgetful for the moment of my own instructions, directed the nurse to apply a poultice and bring the patient to me again when the crust was softened. Two days later the child was brought very unwell. It was feverish; temperature  $103^{\circ}$ . There was an odour of decomposition from the nævus, and a dark sphacelus. I immediately dried the part most carefully with absorbent wool, and applied ethylate freely, covering with dry wool lightly. The good effect was immediate; the decomposition was arrested, a new and firm crust was formed, and from that time the recovery went on favourably, the nævus being destroyed, and scarcely a scar being left. The error I made in this instance consisted in the use of moisture from the poultice. It was this which set up the decomposition, and it was the decomposition and the secondary absorption which set up the febrile condition. I name the fact, and the temporary blunder involved in it, in order to re-enforce the point of practice that in using the ethylate water must never, under any pretence, be introduced as an adjunct. The mention of that example leads me to name the further practical suggestion that the removal of the crust, or the attempt to remove it too quickly, is not a good plan. It is best to let the crust come away of itself, or, at all events, to become so loose that it can easily be lifted away. We may take it as a general rule that so long as the crust is firm the nævus is contracting. Now, therefore, instead of removing the crust entirely, I am content to take off those parts only which are loose, and then to apply another touch of ethylate over the parts that have been removed. Certainly, all violence in removal is essentially mischievous. It causes pain; it often causes bleeding; and it prolongs, instead of expediting, recovery. When the crust is depressed in the centre it may be pierced with a needle, and a little ethylate may be introduced through the openings. This plan answers exceedingly well.

The next four succeeding instances of nævus treated with the ethylate presented no special features, except that in one of



them there were two growths on the same patient. The question here was raised, whether it was best to treat both the tumours at the same time, or one at a time. The last-named course was adopted, and with very good results. The nævus first subjected to treatment was removed in twenty-four days, and after a week the other one, which was smaller, was removed in a little less than the same period of time. The four cases did well, and in one only is there any appreciable scar. The patients were all young. The youngest was six months; the eldest a little under two years of age.

I now come to two cases in which the treatment with the ethylate, though successful, was not so facile. The first of these instances was sent to me by my friend Dr. Stevens, of Norfolk Crescent, Hyde Park. The patient was a beautiful little girl in her second year, and the nævus was situated over the left eye involving the lid. The nævus was of the dimension of a fair-sized strawberry, and various attempts had been made to remove it without success. I commenced in this case by applying the ethylate very freely to a lesser portion, or, I had almost said, segment of the growth, for it was, to a certain extent, divided into two parts. When a fair crust was established on the part treated I applied the ethylate to the remaining part. After four applications I succeeded in getting the whole mass under a firm encrustation, and from the beginning to the end of the treatment, which lasted seven weeks, I forbore from ever forcibly raising the encrustation. Whenever I found a portion of the crust quite loose I lifted it away and reapplied the solution. In this manner the nævus was destroyed, and although a little trouble was for a few weeks experienced with one small remaining spot, in the end the cure was complete, and I had the satisfaction of hearing a few weeks since from the father of the patient that the eyebrow was appearing, that there was no scar, and that some remaining redness, which I had feared might be permanent, was passing away, so that the parts were assuming a perfectly natural colour. The size of the nævus in this case and its position over the eyeball made the treatment more than usually troublesome; but the result was a fair reward for all the pains that were bestowed. The chief difficulty consisted in applying the solution in such a manner as to prevent it from affecting the eyeball itself. Once, during a short and determined struggle by the little patient, a small portion of the solution did touch the conjunctiva, but I removed it instantly by a pouch of cotton-wool, and no mischief followed.

The last case of nævus to which I have to refer was in an infant about ten months old. The nævus was in the fore-part of the neck, and immediately over the larynx. It was of the size of a half-crown piece, and not much raised. It was

troublesome to treat on account of two complications. In the first place, after the vascular structure seemed to have been entirely destroyed, it reappeared in small points not larger than the head of a pin. In the second place, whenever the ethylate was freely used, so as to destroy a large surface of the growth, a very peculiar, sharp, croupy cough was set up, which indicated the necessity of limiting the application. These obstructions, combined with the desire not to produce a scar, caused the treatment to be very prolonged, and to extend over several weeks. Fortunately it has, I hope, ended successfully, and I apprehend without leaving evidence of scar, though that remains to be proved.

Taking all the evidence that is before me, Dr. Brunton's experience, my own, and the facts I have been able to collect from other practitioners, I am of opinion that with patient care in its employment, sodium ethylate may be accepted as a most effective remedy for the ordinary form of *nævus*.

In two examples in which, as I have been informed, there was failure from it, the causes of failure were all sufficient. In one of these instances water-dressing was used to remove the scale or crust; in the other the preparation employed was made with alcohol containing water, whereby a simple caustic soda became the agent that was brought into application.

To secure success it is necessary to have a pure ethylate solution; to make the application without any poultice or water dressing; to allow the crust to loosen of itself before removing it; and lastly, to be patient in treatment, so as to keep up the effect until the growth is entirely destroyed.

*Use of the Ethylate for Removal of Tattoo Marks and so-called Mother's Marks.*—Passing from the consideration of *nævus* I would ask permission to dwell for a few minutes on the question of the use of sodium ethylate in other forms of disease. As a minor point the ethylate is very rapid and effectual in removing tattoo marks, and it admits of being employed with promise of good results in the removal of those diffused *nævi* called blood-stains, or mother's marks, when they are not extremely extensive. In a future paper I hope to bring this last-named subject of treatment before the Society in a special form based on a more perfected experience than I have as yet obtained. Meantime I would offer as a practical memorandum that in treating the diffuse *nævus* or mark it is good practice to commence the application of the ethylate at the extreme margin of the stain, and to produce the encrustation in a line not exceeding the tenth of an inch in diameter.

*The Ethylate in the Treatment of Nasal Polypus.*—I have used the ethylate three times with remarkable success in the treatment of nasal polypus. In two of these cases the polypus was



small, easily discernible, and readily within reach. The ethylate was applied to the pedicle of the polypus from a probe point of cotton-wool held in the blades of a long pointed curved forceps, and in both instances the growth was destroyed during the application, and was removed by after blowing of the nose, the one application sufficing to effect a cure. In another case the result was not so immediate, the patient, the son of one of our professional brethren, and a university student, had suffered from polypus for two years. The polypus had twice been removed by surgical operation, but had recurred. When the young gentleman was brought to me there was a large polypus far back filling up the nasal cavity, so that the base of the growth could not be seen. I made, therefore, a firm pellet of cotton-wool on the curved forceps, saturated the pellet with the solution of the ethylate, and then plunged the pellet into the polypoid growth and retained it there for three minutes. The removal of the pellet was followed by violent sneezing, and a copious discharge of thick mucus and some blood; but when the discharge had ceased the nasal passage was found to be quite clear, and a curved director could be passed into the posterior nares without the least difficulty. The proceeding was followed by some pain and irritation of the mucous surface, which lasted for three days, but did not oblige the patient to keep to the house. On his return to me four days later the passage was so clear that I thought the cure was complete. This view was not confirmed, for a few weeks later the obstruction recurred, and the patient was once brought to me, by my friend, with a polypus as large as before, and completely obstructing the passage. The same plan of treatment was repeated and with the same result of completely destroying, for the time, the polypoid mass. The irritation again continued for two or three days, after which I was enabled, by the speculum, to see the point from which the growth took its attachment. I now directed, with the curved forceps, a pellet saturated with the ethylate on to that spot, and repeated the application every five or six days. Some ulceration followed the last application, but the ulcer healed kindly and left the nasal passage quite clear. The latest report I received, eleven months later, was that the recovery remained complete.

On the whole, I think this case promises a very useful application of the ethylate in a new direction. On theoretical grounds cases of polypus are precisely those in which the ethylate should rapidly produce a destructive action, and in practice, as I have so far seen, the effect is in perfect confirmation of the theory. If further experience should be of the same character, a very troublesome affection will have become amenable to one of the simplest possible forms of curative treatment. Aural polypus

will probably in like manner be successfully treated by the same method, and it may be that some varieties even of uterine polypus will, in skilful hands, be removed by the application.

*The Ethylate in the Treatment of Ozæna.*—The employment of sodium ethylate in the treatment of nasal polypus led me to think of using it in ozæna. Here I have had an experience in a long-standing but not extremely severe example of the disease. In this instance, in a young girl, the affection was confined to one nostril, from which there was constant fetid discharge, with evidence of ulceration of the mucous membrane at the distance of about an inch within the cavity. In this case I diluted the ethylate with absolute alcohol to one-half, and then introduced a pellet of cotton-wool, by means of the curved forceps, into the canal, up to the ulcerated surface. Withdrawing the forceps, I left the wool in the cavity for five minutes, and then withdrew it. The application was attended with severe pain, and was followed by an irritation which lasted for three or four days; but the secretion was so much arrested and the offensive odour so greatly relieved that the patient willingly permitted a repetition of the treatment for three successive times. The discharge thereupon entirely ceased, and the odour has not again been noticeable after a period of several months, so that I hope a cure has been effected.

In these cases, again, the theory of the action of the ethylate as a means of cure is quite in accord with the promise suggested by theory, and that, too, though the bony structure should be the seat of ulceration. For I find that the action of the ethylate on soft bone and cartilage is to destroy texture by the decomposition of water, and to fix or pectise the gelatinous matter. The ethylate may thus again be extended in application on this basis of operation. It may, I think, be often successfully used for the destruction of caries or necrosed bone, attended with purulent discharge.

*The Ethylate in the Treatment of Lupus.*—When I first began to study the action of the ethylates I entertained some hope that they would prove useful in the treatment of malignant growths, and of those pseudo-malignant ulcerations to which we give the name of lupus. So far I have neither been able to confirm nor give up these anticipations. For the destruction of fungoid growths of limited size in malignant ulceration sodium ethylate answers well, but I should be saying too much at present if I assigned for it anything more than a caustic action, rapid and effective, and antiseptic. In treatment of lupus non exedens the results, with some few fortunate exceptions, have been negative. My late esteemed and valued friend, Mr. Robert Ceely of Aylesbury, consulted me last year about the case of a lady who for many years had suffered from lupus non exedens of the face. The ulceration extended over the greater por-



tion of the surface of one cheek, and had shown no tendency to heal until Mr. Ceely commenced the application of the ethylate of sodium. I saw the patient three times, and recommended that the ulcerated surface should first be lightly covered with cotton-wool, and that the cotton-wool should be then saturated with the solution. The application was made every fourth or fifth day; a scale or crust formed, and at the last visit of the patient to me a most decided improvement had occurred. The ulcerated surface had greatly contracted, and the part that had not contracted was covered with a dry scale. In his last letter to me Mr. Ceely reported that the improvement continued, and that he expected there would be complete healing. I am sorry that I have not heard of the further progress of this case.

I have had under my care for nearly eight months a case of lupus exedens, affecting the face on the left side and involving the left ear, in which the treatment with the ethylate has yielded the following results. When this gentleman first came under my care there was a large fungoid vascular growth beneath the ear, which seemed to be increasing rapidly in size; while from the surrounding ulcerated surface there was a free acrid discharge, which was exceeding fetid—so fetid, in fact, that the odour was detectable at a distance from the sufferer. There had also been several severe attacks of hemorrhage from the vascular growth. In this case I treated the vascular growth freely with the ethylate, using it diluted to one-half with absolute alcohol. Some hemorrhage followed, but was arrested at once by the use of the styptic spray which I brought into practice in 1866, and which consists of a mixture of absolute alcohol and pure ethylic ether, in equal parts, saturated with tannin. A firm crust was produced by the ethylate, and the growth was entirely removed. Since then the ulcerated surface has been treated with the alcoholic tannin spray, and whenever there has been reappearance of vascular growth the ethylate has been again successfully resorted to. At one time, after the use of the ethylate, so good a cicatrisation commenced, that I ventured to treat all the ulcerated surface with the ethylate by using a diluted solution of it in alcohol, one part in ten, in the form of spray. Under this, used every third day for five weeks, there seemed to be a general indication of healing. A thin dry crust formed over the surface, and there was general contraction of the ulcer. Unfortunately these good results were not maintained. Some affection of the general health of the patient during the damp cold weather led to enervation and general debility, during which the ulcerative process became active again, and the parts which had contracted and healed recommenced to discharge. Recently, without alteration in the plan of treatment, there has been once more an improvement; and,

on the whole, in the eight months there has at least been an arrest of the disease. That there is death of nervous supply further back I have no doubt, inasmuch as there is trifacial failure; and that in the end the ulcerative mischief will extend I have every reason to fear. I do not therefore suppose that the mere local treatment is more than palliative. At the same time, as a local measure, it is by far the best of any I have ever seen. It prevents decomposition; it destroys vascular growth; it restrains purulent discharge. It has not caused a basic curative effect, but it has limited local extension of disease, has made existence much more endurable, and has, I believe, prolonged existence considerably.

*Subcutaneous Injection of the Ethylate.*—The question whether the solution of sodium or potassium ethylates may be used by subcutaneous injection for the destruction of abnormal growths deserves to be tested. In my earliest communication I suggested their employment for this purpose; and Dr. Sedgwick has reminded me that in a case in which he and I were once in attendance we did, as a last resource, use the ethylate of sodium in the manner referred to. This case was one of extreme hypertrophy of the thyroid gland. The patient was a lady of about fifty-six years of age. She had suffered from enlargement of the gland for many years, and various plans had been adopted for removal of the gland or for reduction of its size. A short time before she came under our care the tumour had been pierced by the needle, and the electric cautery had been brought into requisition several times. At the last of these attempts the needle had broken, and from three to four inches of it remained permanently in the gland. This was sometimes a cause of pain, but was quite supportable, and was probably no more than an occasional inconvenience. The serious part of the case was that the growth continued, that the skin was distended to the extremest degree, that the trachea was pushed far on one side, that the venous channels through the neck were obstructed, and that the œsophagus was so constricted from the pressure that nothing but fluid food could be swallowed, and even that with difficulty.

In this condition we endeavoured to remove the gland section by section by the subcutaneous destruction of it from the injection of the ethylate. Selecting the part where pressure from within was most declared we injected thirty minims of the solution into the structure of the gland at the distance of about an inch from the surface. The operation was followed by some slight local heat and throbbing, which passed away in a few hours, after which there was a very distinct reduction of size and tension of the gland at the part injected. In a few days we injected again with similar good results, and after six injections the gland was reduced to at least a third of its size,



with the greatest relief to the breathing and complete relief to the œsophagus. We were congratulating ourselves on our success when an accidental check succeeded. After coming to my house to have a further subcutaneous injection the patient, who insisted on walking home, was immersed suddenly in a dense London fog with rain. Losing her way for a time, she reached her home at last wet through, extremely exhausted and suffering from cold. She was in this way subjected to an acute attack of bronchitis, with severe cough and expectoration, in the course of which the thyroid became congested and inflamed. Abscess formed in the gland, followed by free discharge of pus. In spite of all she, nevertheless, began to recover and to get up and attend for some weeks to a part of her daily duties, but with an impression fixed on her mind that she should die, and a constant expression that she wished to die. One evening, after making preparation for Christmas festivities, she summoned all the servants under her control, gave some of them presents, expressed regret that she had chided one of them, and then bade them all good-by and dismissed them from her room. A little later a loud ringing brought them back, to find her on the floor with the wound on her neck open and bleeding freely. Dr. Sedgwick was quickly in attendance, and found that she was dead from the loss of blood from one of the large veins involved in the gland. Whether bleeding from the wound alarmed her and led her to remove the dressings, or whether she ruptured the vein herself by interfering with the dressings, we could not tell, but the accidental mode of termination does not to my mind affect the treatment at all in regard to principle; and should another instance of enlarged thyroid come before me in which death from pressure on the œsophagus is inevitable, I shall not for a moment hesitate to suggest the same mode of destroying the gland in sections by the subcutaneous injection of the ethylate.

There are some minor uses for the ethylate, which are not without their practical value. I have used it successfully for removing warts, for destroying a small melanotic growth on the face, for a ringworm which had long withstood other forms of local treatment, for the removal of a small loose hemorrhoid, and for the destruction of the vascular growth dependent on an ingrowing nail. In fact, the ethylate becomes after a little practice with it like a kind of supplementary knife, and in many cases takes the place of the knife without suggesting the fears that are so often connected with that useful but dreaded instrument.

One or two words as to the mode of application. In my first paper I recommended the exclusive use of a glass rod for applying the solution. As I have become more familiar with the treatment I have more commonly used a brush of camel's hair

as more readily applicable. The only objection to the brush is that one using of it destroys it—a trifling objection. Occasionally, when I wish to put on the solution in fine points or lines, I employ a new quill pen, taking the solution up with it in the same way as ink would be taken if the pen were about to be applied for its usual purpose. In this manner the fluid can be applied drop by drop or in line to the part, and its action can be confined precisely to the spot required.

When the solution is used in the form of spray, it should be diluted with absolute alcohol, sp. gr. 795, and sprayed through a Seigle's disperser. The operator in using the spray must be careful not to inhale it himself. In spraying it one day, a little of the fine spray was reflected back into my face, and I inhaled a breath of it, the effect of which was to cause a soreness and irritation of the throat, which lasted some hours. This, however, need not cause alarm. A weak solution can be actually sprayed into the throat, and in cases of malignant sore-throat might prove of great service.

To relieve the pain that is connected with the application of the ethylate, an alcoholic solution of opium may be added with good effect, but for this purpose chloroform must never be used. Chloroform mixed with the ethylate may explode with some violence. All the alcohols treated with sodium or potassium yield a sodium or potassium substitute, and I have made an amylate, a butyrate, and other similar compounds. Whether they will prove useful in medicine remains to be seen. Again, whether potassium ethylate has any advantages over sodium ethylate remains also to be seen. I may relate of potassium ethylate that it is much keener in its action than its sodium ally. It is nearer to the knife, and might almost rival the knife when used in its concentrated form. I have no doubt it will one day come into extensive application, for the whole study of these pectising alcoholic caustics is but in its infancy. For my part, I am repaid already in having been the pioneer in the study, and whatever successes my more learned successors may achieve from it, I most heartily offer them welcome and good-will.—*Lancet*, Jan. 29, and Feb. 12, 1881, pp. 168, 242.

---

#### ALIMENTARY CANAL.

---

#### 47.—RADICAL TREATMENT OF HERNIA WITH THE AID OF CATGUT AND LISTERIAN ANTISEPTICS.

By THOMAS ANNANDALE, Esq., Regius Professor of Clinical Surgery in the University of Edinburgh.

It is scarcely necessary to remark that operative treatment for



the obliteration or removal of the sac, with the hope of causing the radical cure of a hernia, is no new proceeding.

Four methods have been employed with the aid of Listerian antiseptics.

(1.) Ligature of the neck of the sac alone.

(2.) Ligature of the neck of the sac, with invagination of the ligatured sac into the abdominal opening.

(3.) Ligature of the neck of the sac, and excision of the sac below the ligature.

(4.) Ligature of the neck of the sac, with excision of the sac, and stitching together the margins of the abdominal opening.

Having used all these methods, I have no hesitation, from my experience, in giving the preference to the fourth plan. Simple ligature of the neck of the sac is not unfrequently followed by suppuration, or by sloughing of the sac below the ligature, and consequently the ligature either gives way, or only a very slight obstruction results to the re-descent of the hernia.

To the second plan there are much the same objections.

The third plan answers very well in some cases ; but the fourth method gives the best results, and is most likely to be followed by a thorough plugging of the abdominal opening.

The operation, then, which I advocate and practise is to expose the neck and upper portion of the sac by a free incision, to make a small opening into the sac, to carefully return the contents, and, in the case of adherent omentum or intestine, to ligature and divide adhesions, to separate the sac from its attachments to surrounding textures, to draw down the sac and apply a catgut ligature round its neck as high up as possible, to cut away the sac immediately below the ligature, and then to stitch together with a continuous catgut suture the margins of the abdominal opening, the stump of the ligatured neck, and the surrounding cellular tissue. The whole operation and the after treatment are performed under strict Listerian antiseptic principles.

One advantage of this method is that it is applicable, with perhaps some little modification, to all the varieties and all the conditions of hernia, with very few exceptions.

The risk of this operation, if carefully performed, I believe to be slight, for it would appear that a hernial sac, unless of very recent origin, is not by any means sensitive to serious inflammatory action, and it can therefore be handled and operated upon with wonderfully little risk. I will now refer to the classes of cases in which the operation may be used.

(1.) In cases of strangulated hernia.

In January 1872 I operated upon Mrs. M., æt. 70, a patient of Dr. Burns, for strangulated femoral hernia. On opening the sac a knuckle of congested gut was found, and a large piece of omentum, the latter being firmly adherent to the sac. Having

divided the stricture, I ligatured the omentum with catgut, cut it across, and returned the intestine and ligatured stump of omentum into the abdomen. I then separated the sac from the surrounding textures, drew it down, and having applied a catgut ligature round its neck, cut away the sac and adherent omentum. The result was most satisfactory, and pleased me so much that since then it has been my practice, in all cases of strangulated hernia in which the gut was in a proper state to be returned, and in which a distinct sac existed, to adopt this proceeding; but during the last two years I have, in addition, stitched the margins of the abdominal opening together in the way already described. In illustration I relate the following case:—

Miss L., æt. 32, seen with Dr. Somerville of Galashiels on the 21st of January last. She had suffered from an irreducible femoral hernia for three years, and on the morning of the day I visited her she was seized with symptoms of strangulation shortly after straining herself in lifting some heavy books. The usual operation for strangulated hernia was performed, and on opening the sac it was found to contain a large knuckle of gut and a portion of adherent omentum. Having divided the stricture and ligatured and cut across the omentum, the gut was returned, the neck of the sac ligatured, the sac and adherent omentum cut away, and the stump of the ligatured sac carefully stitched to Poupart's ligament and to the surrounding tissues. She made an excellent recovery, and now is able to go about with perfect comfort, but wears a light truss as a matter of precaution.

I could relate other cases of a similar nature, but it is unnecessary. This addition to the ordinary operation for strangulated hernia does not in any way add to the risk of the operation; and I can say from experience that it is not only an assistance in preventing descent of the hernia during the healing of the wound, but it is also a valuable means of diminishing the risk of the hernia returning in the future.

(2.) In permanently irreducible hernia.

The risks connected with hernia of this kind, and the difficulty of treating such cases, have been experienced by all practical surgeons. At any time the condition of strangulation may result, and the risk is increased owing to the difficulty of effectually applying a truss or bandage so as to prevent a further descent of the abdominal contents. The operation advocated in this paper is perhaps of more value in this class of case than in any other, and I offer a few cases in illustration.

*Case 1.*—Mrs. C., æt. 50, admitted into my ward on May 24, 1880, suffering from a large irreducible femoral hernia the size of an infant's head. A swelling was first noticed in the region



of the hernia five years before her admission, and until eighteen months ago was reducible. Since then it has been irreducible, and during the last few months has given her so much inconvenience that she required to lie almost constantly on her back. One week after her admission the operation already described was performed, and as a large mass of omentum was adherent to the sac it was ligatured and cut away. She was dismissed cured and wearing a light truss on the 14th of June.

*Case 2.*—Mrs—, æt. about 40, the wife of an esteemed medical friend, was brought to me by her husband a few months ago on account of an irreducible femoral hernia. She had noticed a swelling in the femoral region for six years, but it gave her no trouble until August last, when it became suddenly larger and caused pain and sickness, which passed away after resting and pushing back a portion of the tumour into her abdomen. Shortly after this the swelling again increased suddenly and gave rise to similar symptoms, which, however, passed off when treated as before. An examination of the swelling and a consideration of the history of the case caused me to diagnose it to be one of irreducible femoral hernia, the result of adherent omentum, and I advised operation to prevent the risk of strangulation. Her husband, being naturally anxious as to the question of operative interference, asked Dr. M. Duncan, who was in Scotland at the time, to meet me in consultation, as he had previously attended my patient. Dr. Duncan agreed with me as to the advisability of the operation, which was performed in the usual way on the 6th of October. A large piece of adherent omentum was present in the sac, and it was ligatured and cut away along with the sac. In less than two weeks the wound was quite healed. A few days after a light truss was applied, and the patient returned home within three weeks after the operation.

*Case 3.*—J. R., æt. 44, admitted June 15, 1880. Two years and a half before admission the patient strained himself, and after this a swelling gradually appeared in the left groin and passed down into the scrotum. It was never perfectly reducible, and the patient, being unable to wear a truss, could not follow his employment, which was that of a miner. When examined there was found in the left side of the scrotum a swelling the size of a child's head. This swelling had a distinct neck passing up into the abdomen, but only slight impulse was obtained when the patient coughed. The corresponding testicle lay on the anterior aspect of the tumour, and the tumour itself was somewhat lobulated, and felt like a fatty growth. The patient, being anxious to obtain relief, requested me to operate, and accordingly I made a free incision over the neck and upper part of the hernia, and in doing so exposed the

testicle and cord, the constituents of the latter being spread over the tumour. The testicle and the constituents of the cord being held away, a very thin sac was exposed, and on cutting into it a large mass of adherent omentum appeared. On tearing this aside a portion of the large gut, with fatty processes attached, showed itself, and on examination this contained gut was found to be the sigmoid flexure of the colon and a portion of the descending colon. Further examination determined that there was no true sac on the posterior aspect, but the large intestine, uncovered by peritoneum, formed the posterior wall of the tumour. With time and care the adherent omentum and the adhesions of the gut to the tissues behind were ligatured and divided, the whole contained gut was returned, and the remnants of the sac were drawn down, ligatured, and cut off, and the margins of the abdominal opening stitched together in the usual way. One month after the operation the wound was healed and a light truss applied. The patient returned home well on the 19th of July.

*Case 4.*—I must now refer to the only fatal case which has occurred in my practice. At the beginning of last year I met in consultation Dr. Traill of Arbroath in connexion with the case of Mr. S— æt. 50. For many years he had suffered from a scrotal hernia on the right side, which gradually increased in size until it formed a swelling which reached nearly to his knee. For two years it had been irreducible, and as he could wear no truss or bandage his life had become miserable to him, and he was anxious to obtain relief by operation or by any other means. On the 22nd of April of the same year I exposed by an incision the neck and upper part of the sac, and without opening the sac, endeavoured, but without success, to return its contents into the abdomen. Finding that the contents of the hernia were adherent to the sac, I opened the sac, and discovered that a large piece of adherent omentum was the cause of the irreducibility. When the sac was opened a large quantity of the small intestine escaped, and it was with some difficulty that this gut was returned. The adherent omentum being ligatured, and the contents of the sac, which consisted of nearly the whole small intestine and a large quantity of omentum, having been returned, the neck of the sac was ligatured, the sac cut away and stitched to the margin of the external ring in the usual way. For three days the patient progressed favourably, but after this symptoms of intestinal obstruction showed themselves, and he died two days after. My opinion is that some twisting of the gut took place and caused the fatal result. I attribute the non-success of this case principally to the large size of the hernia and to the protrusion and return of so much of the small intestine, a proceeding likely to lead to some malposition of the gut.



These cases, together with others of a similar nature which have come under my observation, are, I venture to think, an encouragement to treat by operation permanently irreducible herniæ when the patient's condition admits of such a proceeding.

(3.) In Reducible Hernia.

I am no advocate for operative interference in cases of reducible hernia unless the condition is irrelievable by the application of a truss or other means, and is giving rise to serious inconvenience. When operative treatment is required in these cases I am inclined to advise the adoption of the proceeding of which this paper treats.

This proceeding has certainly the one important advantage that the surgeon sees what he is doing, and I have not found that the free exposure and handling of the parts is attended with any special risk. Mr. Charles Steele, of Bristol, deserves the credit, as far as I can ascertain, of having been the first to treat a reducible hernia on the antiseptic principles. His operation was performed in May 1873, and was most successful. In May 1876, I read before this Society an account of a case, which I believe to be the second on record, operated on by myself in January of the same year, and since that time many operations have been performed, more particularly by continental surgeons. Let me give the notes of a few cases, which, however, do not represent all that I have operated upon. Owing to the loss of case-books connected with my wards in the old Infirmary, I am unable to give a complete list.

*Case 1.*—P. B., æt. 45, admitted November 27, 1876, on account of a reducible femoral hernia, the size of a large orange, which had existed for several years. The patient had worn various trusses, which, however, were not successful in keeping up the hernia. Shortly after his admission I performed the usual operation. Some suppuration in the cellular tissue of the groin followed the operation, but he made a good recovery, and was dismissed with a light truss on the 15th of February, 1877.

*Case 2.*—R. M., æt. 45, was admitted February 14, 1878, suffering from a large reducible inguinal hernia. He worked in an iron-foundry, and after trying many trusses he was obliged to give up his employment, as the hernia could not be retained by any of them. The usual operation was performed, and he was dismissed cured with a truss on the 25th of April.

*Case 3.*—A. B., æt. 42, admitted June 1879 with a reducible inguinal hernia on the right side. He had been dismissed from the army on account of his condition. In addition to the hernia, it was found that the testicle upon the same side

had not properly descended, but lay a little external to the abdominal ring. The position of the testicle prevented a truss being used, and as the patient suffered great inconvenience from the hernia, the usual operation was performed, and the testicle, which was much atrophied, was at the same time removed. The patient was dismissed cured with a truss on the 21st of August, 1879.

*Case 4.*—J. M., æt. 24, was sent to me by the patient, R. M., who had found himself perfectly able to work after the successful operation upon himself. He was suffering from a reducible scrotal hernia which had existed for about three years, and which had latterly prevented him following his employment, although he had tried several trusses. The usual operation was performed, and he was dismissed cured with a truss on the 23rd of January, 1880.

I do not say that these cases which I have related are necessarily permanent radical cures, but I feel confident that the operations performed relieved them of a condition otherwise incurable, and permitted the patients to wear with success a truss and to go about and follow their employment without risk. Whether the operation is inferior or superior to Wood's method of radical cure in cases of reducible hernia I am not prepared to say, as further experience of the results of the former operation is required, but it certainly has the one advantage that it is applicable, as I have already mentioned, and I hoped proved in this paper, to all herniæ, and to their various conditions, with very few exceptions.—*Edinburgh Medical Journal*, Dec. 1880, p. 488.

#### 48.—THE IMMEDIATE CURE OF INGUINAL HERNIA BY A NEW INSTRUMENT.

By W. DUNNETT SPANTON, Esq., Surgeon to the North Staffordshire Infirmary.

The idea of bringing together the pillars of the inguinal ring in such a way as to restore the normal valve-like shape, is based on true anatomical principles, and to Mr. John Wood must be ascribed the great credit of having reduced these to valuable practical results. Wood's operation, however, consists not merely in approximating the pillars of the ring, but in the subcutaneous invagination of the tissues which are intended to fill up the abnormally expanded opening. Stress is laid by Mr. Wood on the fact that, "to ensure success, complete union must be established along the whole length of the canal." This statement first led me to consider how far it might be feasible to secure such a result with greater simplicity and certainty. It will be observed that, in using the wire sutures of Mr. Wood, as ordinarily applied, a hold is secured on the pillars



of the ring at two points only, while the invaginated tissues are forcibly drawn up in such a way as, in some measure, to defeat the object the surgeon has in view, of approximating the sides of the canal as much as possible. By means of the operation I propose, you will see that these drawbacks are overcome. The points of security are multiplied, and the invaginated plug, being rather cylindrical than conical, is retained in position in such a way as to permit the walls of the canal to come as close together as possible. The instruments required are very simple—a thin strong knife, like a tenotomy knife, for separating the skin from the subjacent tissues; and the screw instrument, shaped like a corkscrew, with a flat point and movable handle, nickel-plated. The screw is made rather broader near the point, tapering somewhat towards the handle, and should be sufficiently strong not to break, but yet as thin as may be consistent with strength.

The mode of performing the operation in a case of ordinary oblique inguinal hernia is as follows. The patient must be in good health, have an aperient the day before, and an enema on the morning of operation. If necessary, the pubes must be shaved. Under the influence of an anæsthetic, the hernia is carefully reduced, and not allowed to come down during the operation. An incision is made in the skin of the scrotum large enough to admit the forefinger easily, over the fundus of the hernial sac, generally about two inches below the spine of the os pubis; and the skin is separated from the parts beneath by means of the blade or handle of a narrow scalpel, to an extent determined by the size of the hernia, and that of the inguinal canal. The operator standing on the left-hand side of the patient, the forefinger of the left hand is passed up to the internal abdominal ring, invaginating the fascia and hernial sac to the same extent. A careful examination is now made of the surrounding structures, the position of the vessels clearly made out, the size and shape of the abdominal rings noted, as well as the length of the canal. This is necessary, in order to have an instrument of the proper size. The left forefinger being retained in the hernial canal, protecting the spermatic cord, and at the same time closing the internal ring, the screw instrument, previously dipped in carbolic oil, is, with the right hand, thrust through the skin of the groin so as to transfix the aponeurosis of the external oblique muscle, at a point somewhat above that at which it is intended to pass through the conjoined tendon. Having given the instrument one half-turn to the right, if a right inguinal, and a whole turn if it be a left hernia, it is next made to pierce subcutaneously the conjoined tendon of the internal oblique and transversalis muscles as high up as can safely be reached, the left forefinger carefully

guarding the point, so as to avoid wounding the vessels or peritoneum. This part of the operation must be executed cautiously and deliberately. It will be then found that, as soon as a hold has been secured by the instruments the internal ring is practically closed. Another turn is now given to the screw, causing it to pass through the invaginated tissue—whether consisting of fascia or sac, or both—and it is again passed through the external pillar, and then across to the internal pillar of the external ring, and another turn given if possible, so as to bring the point out at the wound in the scrotum. The handle should then lie flatwise on the abdomen, and the point of the instrument be protected by a round piece of solid India-rubber, or by winding round it some carbolised gauze. A light pad is then placed over the part, and a bandage carefully applied.

The operation may be performed under Lister's antiseptic method, as in two of the cases (iv. and vii.) I have to record; but it is well then to leave the instrument *in situ* rather longer. The results are equally satisfactory if this precaution be observed, and there is, of course, less danger from any septic influence.

The subsequent treatment is very simple. After a period varying from a week to a fortnight, a certain amount of inflammatory action will be observed along the line of the inguinal canal where the instrument lies, and more or less discharge takes place from the wounds. The amount of induration excited will be the guide as to the time for removal of the instrument; but a week has usually been found sufficient. The removal of the instrument is easily effected, as the supuration which takes place along its course serves to loosen it somewhat; and by keeping it well oiled from day to day, it is easily withdrawn. The wounds will readily heal under any simple dressing, with pad and bandage. A truss may be worn for a time, as the adhesions will of necessity not be very firm at first; but, in most of the cases I have operated, on, this has been dispensed with without any ill results.

The aim of the operation is to bring together the pillars of the hernial canal, and at the same time to plug the opening in such a manner as to shut it off from the peritoneal cavity on the one hand, and, on the other, to form an impassable barrier against any further descent of the bowel. So long as the general peritoneal cavity is not interfered with, so far is danger averted; and, if the hernial canal be effectually closed throughout, so to the like extent is the cure complete.

The operation is simplicity itself to anyone accustomed to operative surgery; and, with regard to the danger attending it, I can only say that it has now been performed by myself and my

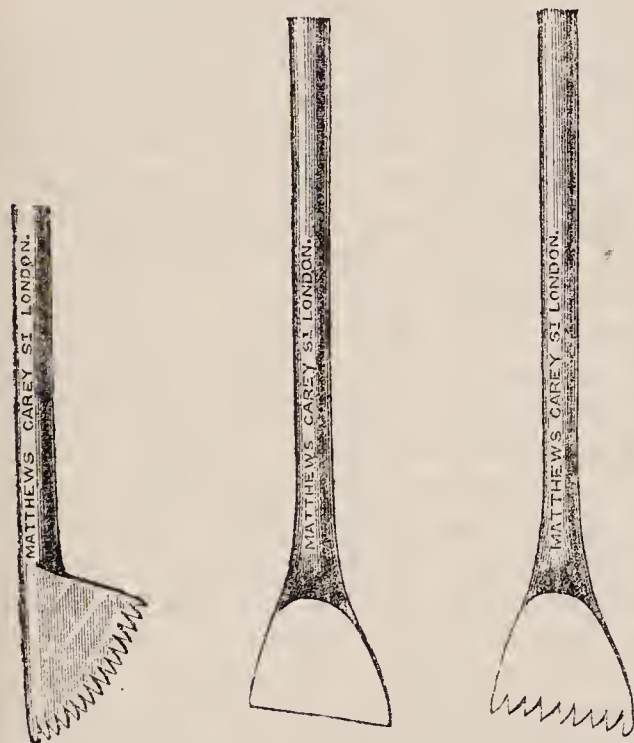


colleagues in thirteen cases, in not one of which has any serious symptom been observed, the highest temperature recorded being  $101.2^{\circ}$  Fahr.; and, in eleven of the cases, the cure has been complete; in the remaining two, the patients have been greatly benefited. I think, therefore, I am justified in saying that it is a simple, a safe, and a very efficient method of curing suitable cases of hernia.—*Brit. Med. Jour.*, Dec. 11, 1880, p. 920.

#### 49.—A SERRATED AND CUTTING CAUTERY IN THE OPERATION FOR HEMORRHOIDS AND PROLAPSUS ANI.

By HENRY SMITH, Esq., F.R.C.S., Professor of Surgery in King's College, and Surgeon to King's College Hospital.

I have until somewhat recently whilst performing the operation with the clamp and cautery for hemorrhoids and prolapsus of the rectum employed the method as detailed in my article in "Holmes's System of Surgery," which consists in seizing and clamping the part to be removed, then excising the free portion by scissors, and subsequently cauterising the cut surface with the hot iron.



During the last year I have reverted to a method somewhat similar to that adopted originally by the late Mr. Cusack of Dublin, and instead of using the scissors for the purpose of removing the growths, I have employed cauteries so constructed that when heated they either cut through the tissues or saw them through at the same time that thorough cauterisation is effected. Mr. Matthews, at my desire, has furnished me with instruments having either a cut-

ting edge or a serrated edge, as here delineated. The blades are set at right angles to the shaft or nearly parallel with it, according to the fancy of the operator. I employ both the cutting and the serrated cautery, according to the nature of the case. If the tumour or tumours to be removed are very large and vascular, I use the latter, as the tissues are divided more slowly, and the cauterisation is more thorough; when the tumours are smaller and less vascular I use the cutting cautery.

I have now employed this method in a large number of cases both in hospital and private, and I strongly recommend it to those who practise this operation; time is saved, there is no need for the use of scissors, and, so far as my observation serves, there is a more thorough cauterisation effected—the cardinal point in this now safe and simple method of removing radically these serious and troublesome maladies.

I may mention also that these cauteries may be used with advantage in the removal of other growths besides hemorrhoidal tumours; thus, for instance, I witnessed my colleague, Mr. Wood, use the heated cautery with the cutting edge in completing the separation of the broad pedicle of an ovarian cyst, which had been previously ligatured, but where a more thorough arrest of bleeding was required.—*Lancet*, March 5, 1881, p. 368.

---

#### ORGANS OF URINE AND GENERATION.

---

##### 50.—ON LITHOTRITY AT A SINGLE SITTING.

By Sir HENRY THOMPSON, Bart., F.R.C.S., &c.

The first time a stone was systematically crushed by instruments within the bladder, so that the fragments might be expelled naturally through the urethra, and thus a cutting operation be avoided, was, as most of us know, in 1824, by Civiale, of Paris. He named the process lithotrity, in contradistinction to lithotomy—crushing the stone, instead of cutting for the stone. The distinction is broad and clear.

Since that time, lithotomy, the outcome of centuries of experience and study, has not materially changed. The new operation, lithotrity, has been greatly modified during fifty or sixty years of practice, and is doubtless still on its way to perfection. It consisted, first, in perforating the stone with a drill, afterwards in crushing it; and, a little later, the *débris* were washed out, instead of being left to nature to expel. But the essential characteristic of the operation, as the name implies, has always been, and still is, the mechanical disintegration of the stone; this is the necessary preliminary to the removal of *débris*, which is a secondary process. These things being so, I believe you will feel with me that it is only logically consistent for us, while it renders only simple justice to the originator, to speak of the process still as lithotrity, and not to exchange this for any other term, so long as the primary element in the proceeding is still the crushing of the stone.

These remarks, however, bring me to a recent and important modification of the operation, proposed by a distinguished American surgeon, Professor Bigelow. Everybody now knows



that he has advocated the practice of removing a stone of large size—however large, indeed, it may be—at one sitting, instead of by several, as had hitherto been the practice in such cases. Small stones, as a rule, and exceptionally stones of medium size, had long before this been so dealt with. But, in order to accomplish his idea, it became necessary, if not to use more powerful lithotrites, at least to use a larger evacuating catheter, and a more powerful aspirator than heretofore. The real change, the new principle in his teaching, is not necessarily associated with the use of the mechanical appliances which he proposed to employ, some of which, perhaps, it is not easy to regard as improvements. The value of his proposal—if it be valuable—consists in something higher than the form of an instrument, viz., in the enunciation of a principle; and an estimate of this can only be determined by the results of a large experience of its application to practice. My aim in this short memoir is to present a humble contribution towards elucidating the inquiry.

Bigelow's principle may be thus epitomised. Granted that much disturbance is produced by a prolonged sitting to crush a large and hard stone, less mischief will arise to the bladder thereby, provided all the fragments are removed, than by devoting three or four shorter but separate sittings to the work; since the presence of fragments in the bladder for a few days injures it more than the single prolonged operation.

The enunciation of this axiom threw light upon a point of practice which I had myself long ago observed, and on several occasions had called special attention to. It is: that, when cystitis occurs in the course of lithotrity, the most advantageous way of dealing with it is, not to treat the patient by the usual remedies for cystitis, but, without delay, to crush the remainder of the stone, and remove the whole by aspiration at once. This proceeding I have found very successful, and had strongly urged its adoption both at home and abroad, long before Professor Bigelow's proposal was announced. I name this merely to show a certain corroboration of his views from my antecedent experience, and not with the least idea of laying the slightest claim to forestall my American *confrère*. It was this conviction of mine, however, relative to the effect of removing fragments, which prepared me at once to believe that the principle of Bigelow's proposal would almost certainly prove to be well grounded. Hence I instantly closed with it, and tested it without delay; only the instruments which he had proposed, I could not accept—could not, indeed, as an old expert in such matters, do other than object to. I commenced the "one-sitting" system accordingly, now about a year and a half ago, and have, during a period of fifteen months, operated by it on

48 adult males with calculi of various sizes. But, during the same period, I have also operated on 8 other male adults: on 6 by lateral lithotomy, and on 2 by multiple crushing of four and five sittings respectively, for reasons to be stated.

The particulars of 35 of the 48 "one-sitting" cases referred to, are recorded in the third edition of my work on *Lithotomy and Lithotrity*, which appeared about two months ago (see pp. 190-3). Since it went to press, I have had 13 more cases, making the 48, and with them two deaths, one of which is not fairly chargeable to the operation; but I have accepted both, and there have been no others. The details of all these cases, with references to those medical friends with whom I saw them in consultation, and who are acquainted with the results, are supplied in a schedule.

Among the six cases of lateral lithotomy, there was only one death, a gentleman, aged 74, whom I cut with my friend Mr. Goolden, at Maidenhead; the rest are living. Lastly, there are two exceptional cases of large calculus treated by multiple sittings, which are briefly as follows.

1. A Portuguese gentleman, aged 53, who came to me from Lisbon, where repeated attempts to remove his stone had been made. Ether was administered by Mr. Clover, who desired, as the lungs were emphysematous, not to prolong anæsthesia unduly. I removed, by lithotrite and aspirator, no less than 780 grains of hard calculus, mixed uric acid and phosphates, by five sittings in seventeen days.

March 10, in 18 minutes, and removing 230 grains.

„	15	„	15	„	„	248	„
„	19	„	10	„	„	136	„
„	23	„	8	„	„	98	„
„	27	„	8	„	„	75	„
							780 „

This stone was, therefore, nearly two ounces in weight. Mr. Henry Smith of King's College was present at every sitting; the patient never had any fever, and made a rapid and excellent recovery.

2. A gentleman, aged 68, with a large oxalate of lime calculus. He was feeble, or I should have cut him, for he had a close undilatable urethra, a large prostate, and a bladder not very easy to work in. I therefore dealt with him as with the preceding cases, removing no less than 640 grains in four sittings. This is the largest oxalate of lime calculus I have ever attacked with the lithotrite; and it was a test for the light but powerful instrument which I have here, and the form of which particularly adapts it to deal with a large hard stone, without becoming clogged. He was brought to me by Dr. Harris of London, who,



with Mr. Furner of Brighton, was present at each of the sittings. I saw him only three days ago, for the purpose of verifying his condition, which is extremely good.

The total, then, of my adult male cases during this period of fifteen months, is fifty-six cases, with three deaths; two being cases of single-sitting lithotrity, and one of lateral lithotomy; a result which, I think, may be regarded as satisfactory. Such a number is, in my opinion, by no means sufficient to decide this question, but it may be taken as a contribution in that direction. The result indicates—and I may further add, that the general well-doing of the cases strengthens the indication—that the new proposal diminishes somewhat the risk, and leaves the bladder generally in a better condition afterwards. This latter result, however, is certainly not always to be reckoned on as an invariable one.

I need hardly say, that the cases of fifty-six individuals so recently treated, might furnish much interesting and instructive material for communication, but our prescribed limits forbid the attempt. I have, therefore, drawn up a few short and practical deductions, as the result of my experience in relation to the choice of operations for stone at present available.

1. It is more than ever important to diagnose carefully, before operating, the size and, if practicable—as it mostly is—the nature of the stone; so that the means employed to remove it may correspond thereto; for, when the stone is small or of medium size, as it is in the vast majority of cases, it is not only unwise, but dangerous, to employ large and unwieldy instruments to remove it. Small instruments are far easier to manipulate than large ones, and do less damage in the bladder and urethra. The latter should never be used, unless the work to be done renders them necessary; and this can only happen in a few exceptional cases. The adoption of the one-sitting principle does not in the least degree render necessary the employment of any special form or kind of lithotrite and aspirator, but demands, for its most perfect development, the use of instruments best adapted for each individual case.

2. There is no doubt that a practised hand thoroughly familiar with the details of lithotrity is more necessary to the success of an operation which is to be completed at a single sitting, *where the stone is hard and not small*, than to that of an operation which consists of several sittings. In other words, the removal of a large hard stone at a single sitting is a more difficult proceeding, and demands more experience and facility in operating, than the old method of submitting the stone to several trials.

3. Speaking with caution, it appears to me that at present we are not justified in attempting to remove all stones by crushing, and certainly not by any one system of crushing. The new

method renders lithotrity safer than before for stones already generally assigned to that process, and extends the crushing operation to some which are larger than those hitherto so operated on. But I still regard lateral lithotomy as an admirable procedure, not only for hard stones—say of about two ounces weight and upwards, as a rough general estimate—but also for smaller ones, in some cases where the urethra is not very large, or other circumstances seem to indicate it. And, in connection with such exceptional circumstances, it is not improbable that the high or supra-pubic operation may be occasionally preferable. I have myself performed it twice when the lateral operation was inapplicable.

Further, I cannot doubt that many men, whose experience is necessarily small, would cut for a hard stone, weighing an ounce, more safely than they would crush it at a single sitting. Great and irretrievable damage may be easily inflicted by large lithotrites and evacuators in unpractised hands. For two of the fifty lithotrity cases I preferred multiple sittings, for the reasons given; and I strongly advise the exercise of an independent judgment in every case, and not the pursuit of any routine without reference to the very varied circumstances which calculous disease so largely presents.

The results of Bigelow's method in my hands has, thus far, been to give me a proportion of only six cases of lithotomy in fifty-six male adult cases, or one lithotomy to nearly nine lithotrity; whereas, taking my total of now nearly seven hundred cases, the proportion was about one lithotomy to five and a half lithotrity. And the result of those six cases of my present fifty-six, in which I rejected the crushing operation and performed lithotomy, is admirable; five at this moment enjoying good health—a condition which I believe would have been quite unattainable for those particular patients by any form of lithotrity. I think I am entitled to regard these facts as affording important illustration of the necessity for employing different modes of operating, and for the exercise of a sound judgment in selecting the most appropriate method for each individual case.—*British Medical Journal*, Dec. 11, 1880, p. 913.

#### 51.—ON PROLAPSE OF UTERUS AND BLADDER.

[The following case in the Western Infirmary, Glasgow, shows very good results from operation for restoration of perineum.]

Mrs. G., aged 56, was admitted 11th August, 1880, suffering from prolapse of the uterus and bladder of four years' duration. On inspection, a large tumour could be seen projecting from the vulva and lying between the thighs. The main part of it was composed of the bladder, as was shown by passing the sound into it from the urethra. It could easily be replaced in



the vagina, but soon prolapsed again when patient assumed the erect posture. The perineum was so much stretched as to afford no support to any instrument which might be introduced; an attempt, indeed, had already been made in this direction, but had proved quite ineffectual. The patient was therefore advised to submit to operation.

On 12th August, chloroform having been administered, Dr. Reid proceeded to operate. A triangular flap of mucous membrane was first dissected from the posterior wall of the vagina with its apex downwards and the base about 1½ in. up the vagina. The edges of the labia majora were then rawed, a strip of membrane about half-an-inch broad being dissected off as far forward as the urethra. The flap of mucous membrane first formed was then drawn forwards with the apex towards the urethra (the mucous surface being thus towards the vagina, and forming a floor to it), and the edges united to the mucous edges of the rawed surfaces with silk sutures. The opposing rawed surfaces of the labia were brought together by sutures of silver wire, the ends of which were guarded by india-rubber tubing.

During the operation, a stream of carbolic acid solution, 1 to 40, was kept flowing over the parts.

The after treatment consisted in confining the patient to bed with the legs fixed together in order to prevent the risk of the perineum being torn open. The bowels were moved cautiously at long intervals and the parts syringed with carbolic acid solution every two hours at first, but later less frequently.

Union took place rapidly, no inflammation or suppuration being seen at any time. The silver sutures were removed in ten days, and the surfaces were found firmly united. Patient was able to be up and going about three weeks after the operation, but at first wore an external perineal bandage. She was dismissed on September 24th, at which date the parts operated upon had quite consolidated, and the previously prolapsed organs were perfectly retained within the vagina, no external support being needed. She was seen again on 8th October, when the result was found still very satisfactory.

*Remarks.*—The flap of mucous membrane was intended to prevent the passage between the stitches of the fluids which usually collect in the vagina, this being well known as a cause of fistulous opening between the two farthest back sutures. The theory is that the edges of mucous membrane being neatly brought together while clearly visible and easily within reach would unite rapidly, and the gravity of mucus or pus would be prevented from doing mischief. Great weight is laid on the good effect of carbolic irrigation of the parts, before, during, and for some days after the operation till union is far advanced.

During the operation it enables one to see exactly what the instruments are doing, the blood being rapidly washed away, the hemorrhage is lessened, and the parts are kept sweet and clean, parts which, from their position, cannot be kept strictly antiseptic.—*Glasgow Medical Journal*, Dec. 1880, p. 504.

---

## 52.—ON BLADDER DRAINAGE.

By JOHN CHIENE, Esq., Edinburgh Royal Infirmary.

In August 1876 a case of perineal fistula was admitted into the clinical wards in the Royal Infirmary. A large opening, the result of sloughing, had formed in the floor of the urethra behind the scrotum, through which all the urine passed at each act of micturition. It was evident that a plastic operation was necessary. From previous experience in such cases, the great delay in healing seemed to me to be due to the difficulty experienced in keeping the wound dry. If a catheter is tied in the usual way, and a plug worn, which the patient removes at each call to micturate, the result is that on the day following the operation, during micturition, the urine passing along the sides of the catheter reaches the wound, and interferes with, or altogether prevents union. Even if no plug is used, the urine being allowed to drip into a basin between the patient's legs, the same result follows, to say nothing of the damp, uncomfortable condition of the bed.

The problem seemed to be, How can the wound be kept dry for some time, and thus placed in favourable conditions for healing? The method adopted, after various experiments and trials, was as follows:—A gum-elastic catheter is introduced and fixed to the penis with sticking-plaster. Care is taken that the eye of the instrument is just within the neck of the bladder. To this catheter an india-rubber tube is fixed, of sufficient length to reach without being strained over the side of the bed to the floor. It then passes into a bottle. The bottle and tube are filled with carbolised water before attaching the apparatus to the catheter. Care is taken that no air can get in at any of the joints. It is well to introduce a piece of glass tubing at a convenient part for observing the direction of the flow. In order to keep the india-rubber tube steady in the bottle a piece of glass tubing is attached to its extremity. If the glass tube extends beyond the neck of the bottle, any folding of the india-rubber tube at this point will be prevented. It will be evident that a siphon action is in this way established, with a suction power the strength of which depends on the height of the column of water, and which will draw the urine into the eye of the catheter as it passes drop by drop from the opening of the ureters into the bladder, and a constant slow current of



water will pass along the tube into the bottle. The bottle is allowed to overflow into a basin, which, as it fills, can be emptied by the nurse without any risk of displacing the apparatus. The bladder is kept constantly empty, with the exception of two tiny streams of urine from the ureters to the eye of the catheter. Care must be taken not to have too great a fall, or the suction of a piece of mucous membrane into the eye of the catheter will cause uneasiness and plug the catheter. The height of the hospital bed is generally sufficient, and in some cases even a less height is all that is required.

It will be evident to the experimental therapist who may desire to study the action of diuretics that by this apparatus much will be learned. The bottle being graduated, the rapidity of action can be easily studied. Since using the instrument on the human subject I have learned that Professor Goltz of Strasbourg has used a similar apparatus in an experimental research requiring an accurate estimate of the exact amount of urine secreted in a given time. In the first case the apparatus did not act perfectly, and on the sixth day the wound became wet with urine. The result was only an improvement. Still, the success was so marked that I tried it in the following year in another case, in which the floor of the urethra was destroyed for an inch and half by injury. The result in this case was a complete success. After the plastic operation the apparatus was applied, and the wound kept perfectly dry until it was soundly healed.

Since 1877 this method has been used in a case of recto-urethral fistula with much advantage; in 1879, in four cases of chronic persistent perineal fistulæ (which had resisted the usual means of treatment). In three of these cases a stricture, in the fourth a perineal abscess, the result of cold, started the condition. In all a permanent cure resulted. In these cases the instrument was kept in continuously for periods varying from a week to a fortnight. It was occasionally removed in order to readjust it. During the time it was removed for cleaning, the patient was instructed not to make his water. I have never found any bad results whatever follow its use. It is also of value in hastening healing, and keeping the patient dry and comfortable during the healing of the wound after external division of a stricture.

Let me, however, more particularly direct attention to bladder-drainage in chronic cystitis. It will, I think, take a most important place in the treatment of that troublesome and common affection. The two great symptoms are frequency of micturition ("irritable bladder"), and excessive quantities of mucus in the urine ("catarrh of the bladder"). The first symptom is at once relieved by the use of the instrument, and

in some cases its use even only during the night gives the patient unspeakable comfort, but in the majority of cases it is best kept in the bladder continuously. The difficulty is the choking of the instrument with mucus; this will be prevented by having a double eye in the catheter, and by raising the bottle night and morning in order to make a back-flow, which clears the instrument. The patient can very soon tell when the flow ceases, and the bottle can then be raised slightly above the level of the patient. At once the plug of mucus is displaced. It is very interesting to observe the effect of rest to the bladder as indicated by the decrease in the quantity of mucus. In one case of perineal fistula, complicated with chronic cystitis, this improvement was very marked. The systole and diastole of the bladder are excessively increased in irritable bladder. No heart would stand such an increase in its pulsations. This, in my opinion, is one of the reasons why chronic cystitis is so intractable, and any means by which we can prevent the periodic rise and fall of the bladder, the incessant unrest of the organ, will always be of the greatest value in relieving inflammation of the viscus. For its value in chronic cystitis alone I would be inclined to recommend a careful trial of bladder-drainage. By some means or other let it be carried out; the method matters not. What is important is to come to a conclusion as to the value of the principle involved. Its main value in chronic cystitis, in my opinion, is to give the bladder rest. It acts as a drainage-tube in a wound or in an abscess cavity. It has, however, a value in urethral fistulæ; in those requiring plastic operations it keeps the wound dry and allows speedy union to take place; in those requiring only that the urine which is abnormally passing along the fistulæ and keeping them open should be prevented from so doing, by being drained off immediately on its entrance into the bladder. *To give the bladder rest and to keep the urethra dry,* I know no better means than that which I now advocate. I am not aware that the idea of keeping up a constant suction power which draws off the urine as it drops into the bladder has been previously recommended in surgical practice. It is certainly a very different thing from the use of the catheter tied in and used in the ordinary way. That the means recommended are simple is self-evident; they can be applied by any one. That no harm is done to the patient is the result of my experience; that all operations on the urethra are treated more certainly by the use of the apparatus, and that it is of great use in many cases of chronic cystitis, relieving the symptoms in all, and giving permanent relief in others. That the symptoms of chronic catarrh are in some cases very intractable is evident, when we remember that chronic cystitis has been



treated by the lithotomy incision in order simply to rest the bladder. Such are the reasons why I have introduced this means of treatment to the notice of the members of the Medical Chirurgical Society of Edinburgh.

*Note.*—In the discussion which followed the reading of the paper several points were raised to which it may be well to allude :—1st, Its use in catarrh of the female bladder. I have tried it, but found the siphon did not work. I believe, in consequence of the short urethra, air passed into the bladder and destroyed the siphon action. 2nd, The use of the red rubber catheter instead of the gum-elastic instrument. The red rubber catheter is not so easily fixed in position. 3rd, Its use in enlarged prostate and malignant disease of the prostate. I have not used it in these diseases. In one case of enlarged prostate I tried it, but it did not work efficiently; it might, however, be of use. For my own part, since Mr. Jonathan Hutchinson directed my attention to the value of the red rubber catheter for drawing off the urine in prostatic cases the disease has been robbed of many of its terrors. 4th, The danger of phosphatic deposit on the point of the catheter. This has never given me trouble. I suspect the reason is that the point of the instrument is not lying in urine, but is practically dry, the urine being drawn off into the eye of the instrument by the suction power, to which, I believe, the value of the instrument is to be attributed. 5th, I have never had occasion to use it in rupture of the membranous urethra. In such a case I should most certainly try it. It would be of great assistance in preventing extravasation of urine. 6th, The habitual night and morning raising of the bottle is, in the majority of cases of chronic cystitis, sufficient to keep the catheter clear of mucus and prevent plugging of the instrument. 7th, How the catheter should be fixed to the penis. In tying in a flexible catheter, which adapts itself to the curves of the urethra, the best way, in my experience, is to fix a strip of sticking-plaster to the catheter firmly with silk. This strip passes down either side of the penis. A piece of boracic lint is wound round the catheter at the meatus urinarius, under the strip of sticking-plaster. Another strip of sticking-plaster is wound round the penis, over the strip passing down the sides of the organ. After it has been round twice, the strip passing along the sides of the organ is turned back towards the point of the penis, and then two more turns are applied over it; it is then turned down again, and two more turns are applied. In this way the catheter is practically incorporated with the penis. I have always used common sticking-plaster; the rubber plaster might, however, I think, with advantage take its place.—*Edinburgh Medical Journal*, Dec. 1880, p. 516.

## 53.—ON CHRONIC ENLARGEMENT OF THE PROSTATE.

By THOMAS SMITH, Esq., F.R.C.S., Surgeon to  
St. Bartholomew's Hospital.

In private practice you are certain to be called upon to treat urinary difficulties arising from prostatic enlargement in your patients: and among those of you who may attain to the dignity of a hoary age, some, without doubt, will be called upon to suffer in their own persons from prostatic enlargement and its consequences.

In chronic enlargement of the prostate the increase in size is due to a true hypertrophy of the normal structure of the gland. This hypertrophy may affect the whole gland, the middle and lateral lobes being alike enlarged; or a single lobe, usually the middle lobe, may be alone affected; again, there may be a separate tumour of prostatic tissue embedded in the substance of the gland, or pedunculated growths may spring from the gland and project into the cavity of the bladder.

On the table you may see specimens of every kind that I have mentioned.

The consequences of enlargement of the prostate, from a mechanical point of view, depend upon the part of the gland affected. In a general way the urethra is lengthened at its vesical end, is turned upwards, and its curve is increased; if one lateral lobe of the gland only be enlarged, the urethra may deviate to one side or the other, though the general calibre of the canal is but rarely diminished.

Again, the cavity of the bladder may be intruded on by growth of the gland, and its capacity be considerably diminished.

Certain pathological changes follow in the progress of the disease. And first, in order of time, the muscular coat of the bladder may hypertrophy from frequent straining to void water. Later on, the ureters may become dilated, and the kidneys suffer from obstruction to the escape of urine. After a while, the mucous membrane generally becomes the seat of chronic inflammation, and the muscular coat yielding by degrees to slow distension, the capacity of the bladder may be much enlarged.

In the later stages the mucous membrane may become sacculated, that is, pouched out between the muscular fibres.

With regard to the time of life at which enlargement of the prostate first manifests itself, Sir Henry Thompson states that the disease, or rather its consequences, are not generally observed before the age of fifty-five. For the most part, those who will come under your treatment will be older than this, since the larger number will not apply for treatment until the hypertrophy has been some time in progress.



I see from this ward-book that sixty-seven is the average age of all the patients admitted into Henry ward in the last two years for prostatic troubles. They were all at the time of admission suffering from retention of urine, and were therefore presumably in a somewhat advanced stage of the disease.

This prostatic hypertrophy need not be regarded as a necessary calamity of old age. From the examination of the bodies of a large number of old men, Sir H. Thompson found that some enlargement of the gland existed in one-third of the whole number.

The symptoms of prostatic hypertrophy in the early stage are not of a prominent kind; indeed, the gland may attain a considerable size without giving rise to much trouble. But so soon as the enlargement begins to obstruct the exit of urine, the patient may notice that his urine escapes with less force, being no longer projected in a continuous stream from his body. He also finds a little more difficulty in turning on the stream and in turning it off than in former times.

To the increasing difficulty there could be added an increasing frequency in the act of micturition, with a corresponding diminution in the quantity passed on each occasion.

These frequent calls to micturate becomes a very serious item in the disease, disturbing the patient's rest by night, and interfering with his business or pleasure by day.

The difficulty in passing water, as it increases, generally leads to an inability to empty the bladder completely, and thus little by little the urine may accumulate until the quantity habitually retained may be so large that the distended bladder can readily be felt in the abdomen above the pubes; meantime the power of voluntary micturition may be altogether lost, and the urine may continually dribble away.

I should remind you that at any time in the course of the disease the patient may be attacked by retention of urine.

When these or any of the symptoms I have referred to occur in an elderly man, you should make it your business to examine with your forefinger through the rectum, and in almost all cases where the gland is enlarged you will find it encroaching on the cavity of the bowel. I say, almost all cases, for occasionally no undue prominence is to be felt in the rectum, though there may be a polypoid enlargement of the gland projecting into the cavity of the bladder and obstructing the exit of urine.

The signs of prostatic enlargement in the later stages are such as belong to progressive cystitis—namely, increased frequency and pain in micturition, stringy mucus and muco-pus in the urine, a foetid condition of the urine, and a general

decline in the vital powers of the patient from pain and urinary misery.

I mentioned that complete retention might occur at any period when once the prostatic enlargement was fully developed; and the exciting causes of the attacks are various. Among the upper classes, dining out, with its temptation to excess, is a fruitful source of mischief; and with the lower orders, the public-house has much to account for in this respect. Exposure to cold, excesses of any kind, indeed, anything that may cause a local congestion of the parts concerned, may prove the exciting cause of an attack of retention.

I must not omit to mention yet another calamity contingent upon those who suffer from prostatic enlargement, and this is hemorrhage; and this, if it occurs in any quantity, generally causes retention from the formation of clots within the bladder.

*Treatment.*—Your assistance will rarely be sought in the early stages of this disease; but should you be consulted by an elderly patient suffering from undue frequency or difficulty in micturition, it will always be prudent to make a digital examination through the rectum, to ascertain the condition of the prostate. The examination is best made with the patient lying down on his back. Your finger-nail being filled with soap, and the finger well oiled or greased, it should be introduced very slowly, so as not to excite spasm of the sphincter.

Should you judge that the urinary difficulty is caused by prostatic enlargement, the occasional passage of a full-sized instrument will often relieve the inconvenience, and, if, steadily persevered in at regular intervals, will generally secure the patient against all the more serious consequences of the disease.

In cases where the difficulty in micturition has gone on to produce an inability to empty the bladder completely, it is of primary importance that at least once in the twenty-four hours the urine should be all drawn off; but in carrying out this plan it is necessary to exercise caution, lest by suddenly emptying a greatly distended bladder you should produce a complete paralysis of the organ, with the loss of the power of voluntary micturition, and cystitis.

As a general rule, if there be not more than one pint of retained urine in the bladder—that is, urine the patient is unable to pass for himself—it may be safely drawn off at once. But if there be more than this of residual urine (and there may be several pints), you should draw it off by instalments, taking away a little more each day, until the bladder is completely emptied.

This complete evacuation of the bladder, when once accom-



plished, should be repeated each day by means of an instrument, and for the purpose an india-rubber catheter, a bulbous-ended or a Coudé catheter, should, if, possible, be used.

By these means in an early stage of the disease the patient will generally regain the power of normal micturition, or at all events, if this result be not attained, he will be secure from the worst consequences of the disease.

The treatment may be carried out by the patient himself if you will be at the pains to teach him how to pass an instrument—nowadays a comparatively simple process, owing to the great improvements in catheters; for you should know that since the introduction of the various forms of soft catheters now in use, the instrumental treatment of prostatic enlargement has lost more than half its terrors and much of its danger.

This large silver prostatic catheter which I now show you—at one time almost the only instrument used in these cases—is truly a formidable weapon, with its long shaft and wide-sweeping curve. It was constructed to ride over the prostate, but in the hands even of experienced surgeons it frequently failed in the performance of its normal functions, and rode under the gland, or through its substance. Used with a strong and steady hand it rarely failed to draw off water. As an instance of its powers in this respect, I may mention a case within my knowledge where a prostatic catheter in the hands of an energetic surgeon drew off some gallons of water, which however, a post-mortem examination disclosed to have come from the peritoneal cavity.

I will suppose now that you are called upon to treat a patient with retention of urine dependent upon enlarged prostate. The difficulty will usually have come on at night time; the patient will, as a rule, be advanced in years; and the prostate can be felt in the rectum unduly prominent. In such a case let me advise you first to try a flexible red rubber catheter, of full size; it will often find its way round a corner, and through a urethra which would be impervious to a more rigid instrument. This failing you should try and pass the same catheter with a stout wire stylet reaching two-thirds of the way down the instrument; this gives you more power to push the catheter onwards, and leaves the end flexible to accommodate itself to the disorted urethra.

Next in order you may try the Coudé catheter, which I show you; then, if necessary, the bulbous French instrument, a gum-elastic, without and with the stylet; and lastly, others failing, a silver instrument.

Whatever instrument you use, let it be a full size; it will go in as easily as a smaller one, and is less likely to damage

your patient. Keep the point of the instrument on the upper wall of the urethra; and, above all things, use no force.

After drawing off the water in a case of retention, the patient will, for a time at least, require the regular use of the catheter until he recover his power of voluntary micturition; and should there have been great difficulty in introducing the catheter, I should advise you to tie it in for the first twenty-four hours.

In the subsequent treatment of these cases of prostatic retention, in addition to other troubles, you will often have to contend against an increasing frequency in micturition. The frequent desire to pass water must be resisted as much as possible by the patient, or it will grow upon him. The bladder must be completely emptied, and, if need be, washed out, at regular intervals, and the patient exhorted not only to resist by a strong effort of the will the solicitations of his bladder, but to avoid all sights and associations that are likely to suggest to him the necessity of micturition. With this object in view, you should counsel your patient to keep his catheter and chamber-utensil out of sight, as soon as possible to leave his bedroom during the day, and to occupy his mind by any pursuit which may draw his thoughts away from his urinary necessities.—*Medical Times and Gazette*, Dec. 18, 1880, p. 691.

---

#### AFFECTIONS OF THE EYE AND EAR.

---

#### 54.—ON AN IMPROVED OPERATION FOR A NEW PUPIL AFTER CATARACT OPERATIONS.

By Dr. EDWARD G. LORING, New York.

When, after an operation for cataract, the pupillary space becomes closed through inflammatory processes, it becomes necessary to open this by what is known as a secondary operation, but which is often, if not usually, a more serious undertaking than the original operation; how serious, indeed, is shown by the repeated operations which become necessary, in order to establish an opening and to counterbalance the ever-recurring and almost irresistible tendency to a subsequent closure—operations which, from their very frequency and inherent violence, often lead to a total loss of the eye.

The means by which these openings through the denser membranes are usually made consist either in a simple iridec-tomy or in this combined with the excision of the iris *in situ* by means of scissors, as, for example, those of Wecker. But both of these methods are open to grave objections, which are only too apt to defeat the object of the surgeon and to cause



the operation to fail even where success seemed to be most apparent. For, even with a simple iridectomy, a large external wound must be made in order to give sufficient play to the arms of the forceps, as one of the chief, if not the chief, reason why a failure to grasp the iris takes place is because the opening-wound is too small. This necessity of making the external wound of sufficient size is, however, in itself a source of great danger, no matter how smoothly the operation may have passed off, for the inflammatory reaction which accompanies the closure of the wound is apt to propagate itself to the iris, already the subject of inflammatory processes, and a new attack is lighted up, to be followed by even a firmer closure of the pupil than before. Thus the apprehensions arising from the external wound alone are neither light nor to be disregarded, but, when to these are added the difficulties in seizing the iris, the tension required to draw this through the wound, the great danger of rupturing the hyaloid, the loss of vitreous, and the occurrence of the deeper-seated and oftentimes violent hemorrhages, we have one of the most difficult and harassing positions in which the ophthalmic surgeon can be placed.

Nor is this all, for it often happens that this secondary operation for iridectomy passes off with perfect success. A large piece of the iris is excised, and the pupillary space presents a uniform and promising blackness. Moreover, the convalescence is perfect and unretarded, while the eye, when the bandages are removed, presents a very favorable aspect; but, unfortunately, to the grief of the patient and the surprise and mortification of the surgeon, vision is no better than before the operation, and a thorough examination now reveals the fact that the iris has come away, leaving behind it a thickened and deep-seated membrane covered with uveal pigment, which, surgically speaking, is harder to deal with than before the iris was removed.

Nothing remains to be done under these circumstances but a needling operation, which, from the widely extending ramifications of the membrane and its connections with the ciliary body and hyaloid membrane, is both difficult and dangerous. It is to avoid these numerous and, as a usual thing, inefficient operations, that it has been proposed to attack these membranes from the beginning with scissors, with the hope of excising a piece of sufficient size to insure a permanent opening. This proceeding, to which are added, besides the dangers of simple iridectomy, the almost unavoidable loss of a large quantity of vitreous, is so grave in its nature, and so disastrous in its results, as to be, in the writer's opinion, seldom or never justifiable, especially as a much simpler and more efficacious method can be adopted.

This consists, in the writer's opinion, in the transverse division of the iris and all underlying membranes—a modification, in fact, of the operation of iridotomy. This operation is at the present time but seldom performed, as the cases to which it is adapted are supposed to be of rare occurrence, and from the fact that even in these cases it rarely results in success. This want of success, however, is due, I think, not so much to the kind of operation, as to the manner in which it is performed. For the knife is entered commonly somewhere in the arch of the clear cornea, nearly perpendicular to the plane of the iris, and consequently at a small angle with the position of the opening to be made in its surface. From this it results that either the edge of the pupil is simply depressed before the knife, or, if a perforation is made, it is very small, and, from its position in the centre of a tense but inelastic membrane, is apt to close again almost immediately after the operation.

The substitute for this operation which I now propose consists, not in a simple opening in the centre of the iris, but in a large, free, and transverse section of the iris and all underlying membranes. The method of arriving at this result is as follows: Any narrow knife, such as the ordinary cataract knife of Graefe, may be used, though the narrow blade suggested by Liebreich is preferable. Better than either, however, I think, is the knife which I have had constructed for this purpose. This is simply an extremely narrow knife, with a very delicate cutting edge. The reason why the knife is made so narrow is, that it may be turned on itself in the wound, at right angles, if necessary, with the position it occupied in making the puncture.

During the last year or two I have experimented with knives of various kinds and shapes, especially with those in which the blade is comparatively short, that is, from five to eight millimetres in length, with a delicate round shank; but I have a decided preference, in this method of operating, for one which has a long and continuous cutting edge, for others are apt to pierce the membranes without cutting them, when these are dense and tough, as is the rule in the cases under consideration.

The eye is fixed in the ordinary method opposite to the site of puncture. The knife is then entered, not in the clear cornea, but at the sclero-corneal junction, or just within the scleral ring, and at the middle and outer circumference, if the cut is to be horizontal, at the lower border, if vertical—as it usually is. Still, in desperate cases the horizontal section of the iris has given, in the author's hands, the best results. The puncture is, indeed, made precisely as in the operation for cataract. If the anterior chamber is deep enough, and a narrow knife is used, this is entered with the edge downward, the blade of the



knife being perpendicular to the plane of the iris. The knife is then carried completely across the anterior chamber, precisely as if a counter-puncture were to be made, until the point arrives at the peripheral portion of the major circle of the iris. The section is then performed by suddenly depressing the point of the knife with a bold, free movement of the hand, until the handle of the knife, from being horizontal, assumes a vertical position. Nor should the operator be content with this movement alone, but supplement it, while the point of the knife is still deep in the vitreous, with a gentle sawing movement while the knife is being withdrawn. In this way the fibres of the iris are thoroughly divided through its entire diameter, even up to the ligamentum pectinatum, and upon this fact I think the success of the operation depends; for we know that in that rare accident, rupture of the iris from violence, the resulting opening is not a linear split, but a wide extending aperture, which has precisely the appearance as if a large and complete iridectomy had been performed, although the eyeball itself has remained intact. Moreover, the autopsy shows in these cases of rupture that the cleft extends back as far as the ciliary processes themselves, and I am of opinion that something of the same kind takes place, through the elasticity of the tissue, when the incision is made to extend to the extreme peripheral portions of the iris. Of course, the cut must not be carried so far as to involve the ciliary processes and the ciliary muscle, though little injury, I am inclined to think from my own experience, would follow even if these were invaded to a small degree.

If a very narrow knife is not used, but the ordinary Graefe knife employed instead, or the anterior chamber is very shallow, then the knife is entered as in the ordinary operation for cataract, with the flat side parallel with the iris. It is then rotated when the point arrives at its proper destination, until the cutting edge is presented fairly to the membrane. The turning of the knife wrinkles up the cornea to a certain degree, but, notwithstanding this, the rotation should be thoroughly performed. For, if the attempt is made to depress the knife on the flat, or at an angle, the resistance offered by the thickened iris may suffice to tear this latter from its attachments, or, a small rent in its surface having been made, the rest of the iris may be so folded back behind the knife as to give the impression that an opening of considerable extent has been effected, but which closes up again almost immediately by the depressed portion of the iris returning to its former position and becoming fused a second time with the surrounding tissue.

As a first result of the operation, the surgeon usually finds the tissue give way before his knife, to be followed by a rent of

a jet-black appearance. Should this not occur, he may feel pretty sure that the operation is not going to be successful, which is probably due to the fact that his incision has not been bold and free enough or carried sufficiently toward the periphery at the finish.

In rare cases the new pupil may remain open, and maintain its dark appearance from the beginning, and vision be at once and permanently improved. This can only occur, however, when the bleeding is slight. As a rule, the hemorrhage is sufficient to fill the pupillary space and so reduce the amount of vision that the operator may doubt whether any benefit has been obtained, especially as these clots are absorbed but very slowly. I have known the vision to remain unimproved for the space of two weeks, and then a gradual increase of sight to take place, followed by an admirable result. Sooner or later, a marked improvement almost invariably takes place, provided the sensation of splitting of the tissue under the knife is followed by the appearance of a black pupillary space. In those very pronounced cases where the membranes have such a density and such firm connections that there is fear of tearing the iris away from its attachments or seriously rupturing the hyaloid membrane, it is sometimes of advantage to use a second instrument to support the iris, and thus counteract the traction which the knife exerts in making the incision. A simple stop needle can be used for this purpose, and this is then passed vertically through the peripheral portion of the cornea, transfixing the iris and subjacent tissues as it passes into the vitreous.

The needle is held vertically with one hand, while the cut is made with the other. It also serves, when skilfully managed, for the fixation of the eye. As these needles have, however, no angle, it is a little difficult to hold them in such a position that the iris does not descend along their polished surface with the pressure exerted by the knife when the cut is being made. It was to avoid this difficulty that the hook represented in the figure was designed. It is, in fact, a stop needle with a curve to it. The hook is passed through the periphery of the cornea, and also through the iris and underlying membranes. The handle is then gently raised until the iris rests in the bight or angle of the hook. The hook is, of course, inserted first, but it is better not to raise the handle until the knife has been carried across the chamber, and is in a position to make the section.

What has been said hitherto has applied to those desperate cases in which the inflammation has been so violent as to have invaded the whole iris, and the inflammatory products are so great that it is not so much a question as to what kind of an



opening shall be made and of what shape, as it is to get an artificial pupil at all. But there are cases in which the inflammation seems to have spared the greater part of the iris, but to have blocked up the coloboma, occasioned by the iridectomy, with a membrane too firm, both in its construction and in its connections, to be torn with needles or to be removed by traction. In these and similar cases, it would seem to be wiser to leave the membrane *in situ*, and to split the iris from the sphincter downward. The knife is then entered from below and carried upward beyond the pupillary margin, and the same depressing movement is made as has already been described, care being taken here likewise to divide the peripheral fibres of the iris by a gentle sawing movement as the knife is withdrawn.

The great advantage in this method of operating is the little violence done to the eye, since, in the first place, the external wound is so small that, as a rule, no vitreous whatever escapes, while the wound, from its very minuteness, closes at once, sometimes so quickly that the aqueous humor is reformed while the patient is still on the bed. Moreover, in the vast majority of cases, the operation is so rapid and so painless that it can be performed without an anæsthetic, and can thus be repeated when occasion requires with but little discomfort to the patient and little or no danger of inflammatory reaction. This method is very often of advantage, too, as a preliminary operation in those cases where an iridectomy would seem to be ultimately indicated, for by its means one portion of the iris can either be cut across or freed from its attachments to the surrounding tissue, so that, when the iridectomy is subsequently performed, the iris, having one free edge, can be seized by the forceps or a blunt hook, and drawn through the wound.

There is still another condition in which the operation has been of great service, that is, in capsulitis, which I am inclined to think is not recognized, especially in its early stages and in its lighter degrees, so frequently as its importance demands. The trouble usually begins with an infiltrated and thickened appearance of the posterior capsule, which is often supposed to be due to remains of the cortical substance of the lens. The iris at this time is but little implicated, and is still dilatable to a considerable degree under atropine, and may continue so even when the proliferation of cells is so great as to produce a yellow appearance within the cavity of the capsule, or a hypopyon in the lower part of the anterior chamber. Little by little the iris becomes invaded by transplantation of the inflammatory process; the interchange of fluids between the anterior and posterior chambers is interfered with, the aqueous humor becomes turbid and the eye soft; the vision sinks very much, even to mere perception of light, and the whole eye seems

to be gradually melting away under a low stage of inflammation.

If now an iridectomy is performed, the same dangers arise from the wound, and the same difficulties are experienced in getting out a piece of the iris, that have already been mentioned. But, if, even in the later stages of the trouble, a simple but bold and free transverse division of the infiltrated capsule and the iris, or at least its sphincter, be made, the effect is always salutary and oftentimes magical.

I am therefore convinced, from my own experience, that this method of operation is one of the least dangerous and most efficient and speedy ways of making a permanent opening in just that class of cases which, as a usual thing, offer the greatest embarrassments to the surgeon.—*New York Medical Journal*, Nov. 1880, p. 496.

#### 55.—THE AFTER-TREATMENT OF CATARACT.

By HENRY POWER, Esq., F.R.C.S., Ophthalmic Surgeon to St. Bartholomew's Hospital.

At the last meeting of the Ophthalmological Section at Cambridge, a very interesting discussion incidentally arose respecting the method of treatment now usually adopted after the performance of the operation for the extraction of cataract, and in the course of this discussion it plainly appeared that the practice of different surgeons varies in a very remarkable degree, some applying bandages, others dispensing with them; some who used them employing them wet, others dry; some endeavouring to prevent the occurrence of inflammation by low diet and other antiphlogistic measures, others being satisfied to wait till the symptoms of inflammation are apparent before attempting to combat them; some examining the eye in a few hours, others allowing the bandages first applied to remain for a day or two, others till recovery has taken place; some opening the lids early, others carefully avoiding all disturbance of the eye till well assured that union of the wound had taken place; some instilling atropine just after the operation but not again, others employing it daily, whilst some use eserine.

In view of these differences of procedure, I have thought it might be useful to draw up a short record of the methods, present and past, adopted by some of the best-known ophthalmic surgeons of this and other countries, to comment on any singularities they present, and to give the method I adopt myself.

[Mr. Power then describes the methods of several of our best old surgeons, Scarpa, Adams, Travers, Green, Middlemore, and then says:]

Mackenzie (1844), in the short section he devotes to after-treatment, says, "The room in which the patient is to sleep



after this operation should be large and well aired, with a temperature of from  $50^{\circ}$  to  $55^{\circ}$  F., and free from cold draughts. The patient ought neither to be loaded with unnecessary bedclothes nor exposed to cold from their deficiency. He may lie either upon his back or on the side opposite to that of the eye which has been operated on. He should be put to bed with as little movement of the head and body as possible. The room is not to be made too dark, but is to be kept perfectly quiet in order to avoid all causes of sudden alarm or starting." *Apropos* of this, I may mention a case, one of the few in which I have practised couching. The lady was about sixty years of age. The operation had been satisfactorily completed, and the lens was invisible. She was left alone for a few moments, when unfortunately a cat leaped from a balcony upon a rickety wire flower-stand loaded with flower-pots. The whole stand fell with a very startling noise. The old lady, with her eyes bandaged, and already sufficiently excited with the operation, thought the house was coming down, and jumped up from the sofa on which she was resting, and I had the mortification of finding that the lens again entirely obstructed the pupil. After some time I repeated the operation with success, but she lost the eye from cold two years after. The second eye, treated also by reclinacion, did well, and lasted her for ten years—indeed, until she died. Mackenzie continues, "All unnecessary talking between the patient and those about him is to be prevented. A careful assistant or experienced nurse ought attentively to watch the patient when he wakes, taking care especially that he does not turn suddenly round upon the eye which has been cut, or put up his hand to rub the eye. If there is any particular reason to dread the latter accident, it may be proper to muffle the patient's hands and pin them together or down by his sides.

"It is rarely the case that the patient complains much of pain during the first few hours after the operation. If he does, a grain of opium may be given. Sleep, by closing the pupil, is useful. The length of time during which a patient is to be kept in bed is a point upon which there has been a wide diversity of practice. Wenzel was in the habit at one time of confining his patients to their backs without change of position for a fortnight or three weeks, but afterwards he shortened the period of confinement to eight or ten days. Mr. Phipps, on the other hand, examined the eye on the morning after the operation, applied a shade, and allowed the patient to rise. A middle course appears the most judicious. The patient may be allowed in the course of the second day to be raised up in bed for a short time, to relieve the irksomeness of lying. The incision may be looked at on the third or fourth day. On the fifth or sixth day perhaps the patient may be allowed to be out of bed for a short time.

On the seventh or eighth the eye may be fairly examined, but immediately after covered with the shade. In ten or twelve days the patient may be allowed to look at large objects. For the first fortnight he should make no use of the eye, nor even open it unless the surgeon be present. After a few days more he may be allowed to walk about the room. It is desirable that the patient's bowels should not be disturbed for the first twenty-four or even forty-eight hours after the operation, as the movements of the body in getting out of bed and while at stool may be injurious to the eye. After forty-eight hours a laxative clyster may be administered, if necessary. In healthy robust subjects an antiphlogistic plan of diet is to be observed for eight days or more, according to circumstances ; after which soup may be allowed, and in about a fortnight after the operation a little solid animal food. To persons of advanced life, in whom it is important that the reparative powers should be well kept up, good beef-tea may be given from the first, in a day or two meat for dinner, and after five or six days a little porter.

“The aqueous humour generally continues to be discharged from the eye for about forty-eight hours ; in some cases, however, for a shorter period, and often for a much longer, even for weeks. Lest the discharge of the tears, and also the aqueous humour, if it flows from the eye, should be prevented, it is improper to cover up the eye too closely, and still more improper to load it with dressings and bandages. It is of the utmost importance, however, to keep the eyelids still, and prevent any attempt to use the eyes. These objects are completely obtained by the strips of court-plaster, from the employment of which no bad consequences arise. Those which are applied immediately after the operation may be allowed to remain two or three days, but if the eyes are easy, for four or five days, after which time they should be removed, and the eyelids bathed with warm milk and water. Without opening the eyes, replace the plasters by new ones. This may be repeated every day until the wound is consolidated.”

These observations by Mackenzie are replete with good sense. If they err at all it is on the right side. It is much better to keep the eyes at rest for a fortnight than to run the risk of setting up inflammation, which, when once established, lasts for several weeks, and may imperil the eyes ; and it is to be remembered that he is speaking of the after-treatment of the flap operation as performed with Beer's knife, in which the section was much larger than that made at the present day ; whilst the risk of prolapse, and the seriousness of that accident when it did occur, were much greater than in the mode of operating at the present day.

The treatment adopted by Soelberg Wells is in the main that



adopted by Von Gräfe, whose pupil he was, and I may therefore take it as representing Von Gräfe's proceedings, as well as those in very general use. The account is too long to be given *in extenso*, but I may quote some of the more important passages. In the first place, he says, as it is "of consequence to detect and combat any unfavourable symptoms at the earliest stage, the surgeon should visit the patient very frequently during the first few days after the operation, and, if possible, himself change the dressings, so that he may watch the condition of the lids, the quantity and character of the discharge, &c."

This every one who has had much experience in the after-treatment of cataract will cordially endorse. The cause of a considerable number of failures is undoubtedly a careless removal of the pad and bandage, when these are used. This is more particularly the case when the vitreous has escaped. Here the wound is often very tender, and gapes with the least movement, whilst the pad is unusually adherent. If, from want of patience in moistening the pad with warm water, the attempt is made to pull or drag it off, the lid is separated from the cornea, and the patient suddenly and forcibly exerts his orbicularis, opening the wound, and squeezing out much of the remaining vitreous. Wells proceeds to say that "the after-treatment must be varied according to the general health, constitution, and habits of the patient. The diet should, from the commencement, be light, nutritious, and easily digestible. Meat may be allowed once daily; it should, however, be finely minced, so that there is no need for mastication, which would disturb the quietude of the eye. Good beef-tea or mutton-broth may be given occasionally during the day, but slops are, as a rule, to be avoided. But whilst we endeavour to sustain the patient's strength, we must not fall into the opposite error of over-feeding him. In a very plethoric and full-blooded individual, especially if marked inflammatory and febrile symptoms manifest themselves, a strictly antiphlogistic regimen must be observed. With regard to stimulants and beer, we must be entirely guided by the patient's constitution and habits. It is very unwise to cut off all stimulants from an individual who has always, and perhaps largely, indulged in their use; we should allow him a moderate amount of his customary beverage, watching the while its effect, and diminishing or increasing the quantity as the case may demand. In feeble, decrepit persons, stimulants and malt liquor, together with a good nutritious diet, often prove of great service; quinine and ammonia being also given. It is well to administer a gentle purgative the day before the operation, so that the bowels may not require to be opened for a day or two after the latter. A mild dose of castor-oil should then be given, in order to prevent any straining; and this may be repeated if necessary. When the operation has been

concluded, the patient is to be placed in bed in a darkened room. At night his hands should be tied to the side of the bed, to prevent his touching his eyes during sleep. The lids of both eyes may be fastened with a strip or two of sticking-plaster, although this is apt to irritate from its shrinking and hardening. I myself prefer a light bandage, especially Liebreich's, which is the most convenient for this purpose. If this is found to be too hot, I employ a very thin gauze bandage. A piece of soft linen is to be applied over the eyelid, to soak up any discharge, and prevent its clogging and hardening the charpie, a little pad of which is to be next applied, the whole being kept in place by the bandage. But if we desire to exert more pressure upon the eye, we must employ Von Gräfe's compress bandage, the application of which, however, demands far more care and practice.

“ So much nicety and attention are required in the application of these bandages and in the regulation of the amount of pressure, that we are but seldom able to intrust this to a nurse. If we cannot change the compress ourselves, or leave this duty to a practised and trustworthy assistant, it is far better to abstain altogether from its use. It should be changed night and morning, and if the eye feels uncomfortable, even more frequently. The quantity and character of the discharge upon the linen and charpie should be examined, as it affords a clue to the condition of the eye. The edges of the lids should be softly sponged with lukewarm water, so as to remove any hardened discharge from the eyelashes, which may also be smeared with a little cold cream or simple cerate. This will prevent their sticking together, and thus interfering with the ready escape of tears or discharge. Great care must, however, be taken not to rub or press upon the upper eyelid, otherwise the coaptation of the flap may be disturbed and union prevented. Much comfort and relief is afforded by the sponging and cleansing of the eyelids and the change of the compress. The eye should not, however, be opened or examined unless we specially desire to ascertain its condition. Union of the flap usually takes place within the first forty-eight hours, or even sooner. Then it is advisable to apply a drop of atropine once or twice daily to the inside of the lower lid, without widely opening the eye. This soothes the eye and dilates the pupil, so that there is less chance of a secondary cataract, as the torn edges of the capsule have no point to adhere against, and will therefore retract and shrivel up. Moreover, should iritis occur, it will be of great advantage to have the pupil already widely dilated. It is an interesting fact that if atropine was applied before the operation, its effect upon the pupil partially returns when the section is united and the aqueous humour reaccumulated. Should the atropine cause



any irritation, a solution of belladonna should be substituted. A few hours after the operation, the patient generally experiences a slight sensation of pressure and smarting in the eye, which lasts for a few minutes, but reappears at intervals of an hour or two. It is due to an accumulation of tears and aqueous humour. If the pain increases towards night and becomes continuous, and the eye is hot and the patient restless and uncomfortable, morphia should be administered either internally or endermically. I generally employ the subcutaneous injection, varying in strength from one-fifth to one-fourth of a grain. It may be repeated if necessary. If the eye is very hot and painful, much relief is often experienced from cold-water compresses. But their use requires much care and discretion, for if they are applied for too long a time, they may depress the circulation of the part too much, and thus increase the danger of suppuration of the cornea. I have also sometimes found great relief from the application of two or three leeches to the temple, especially in plethoric individuals.

“If the case goes on well without the appearance of any unfavourable symptoms, such as severe pain in and around the eye, swelling of the lids, muco-purulent discharge, or copious lachrymation, the eye should not be opened during the first five or six days. Nothing is so bad as being too curious as to the result, and opening the eye too early to assure ourselves that everything is going on well, for this may easily set up iritis.

“If after flap extraction the case has throughout progressed favourably, the patient may be permitted to leave his bed for an hour or two at the end of the fifth or sixth day. He should, however, wear a slight bandage, and the room be somewhat darkened, but it should at the same time be kept cool and well ventilated. If the remaining in bed prove very irksome, which is apt to be the case in country people accustomed to an active life, it may be well to permit the patient to get up even on the third or fourth day. But then he must be very carefully watched. In a hospital in which there are no special eye-wards, the beds should have dark-blue curtains round its head, so as to afford a protection against colds and draughts and the bright light of the ward. In such a case, I think it also very advisable to keep the patient in bed some days longer than would be necessary in a private room or a special ward. At the end of the first week, the band may generally be exchanged for a shade, and the patient be gradually accustomed to the light. Should, however, any inflammatory symptoms appear, such as photophobia, lachrymation, swelling of the lids, &c., the bandage should be reapplied and increased care be taken of the eye. If the weather is favourable, the patient may go out into the air at the end of a fortnight. This often proves of

great benefit, especially if there is any conjunctivitis which is apt to become chronic if the confinement to the house has been long. In such a case a weak astringent collyrium should be prescribed."

Having thus passed in review the methods of procedure of some of the principal operators in this and other countries, I may perhaps be allowed to state my own. In private practice I invariably operate at, or soon after, 9 a.m., a time that, I think, presents several advantages. Through a large part of the year the light is good. The patient has had more or less sleep, and is fresher than at any other time of the day; has no clothes to take off, but need only have a blanket spread on a firm couch and a dressing-gown placed over his shoulders. If an anæsthetic be taken, the early morning is by far the best time for its administration, since the stomach is empty and the absolute quantity of blood in the vessels less, so that a much smaller quantity of the vapour need be inhaled; which has the double advantage that the system is not so much depressed and sickness is less likely to occur. Immediately after the completion of the operation a piece of fine dry cambric is placed over each eye, and a light calico bandage, about two inches in width and one and a half yards long, is passed twice round the head and brought over the vertex, its position being secured by pins or a few stitches. The patient sometimes remains asleep for an hour or two, but sometimes awakes almost immediately, and in either case is not removed from the sofa. A little food is directed to be given about midday, and this should consist of cold milk, which, if there is any tendency to vomiting, should be iced. If milk is objected to, beef-tea or a cup of tea or coffee and soft bread may be given. In the course of two or three hours, if there be no sickness, he may be put to bed and will probably sleep. Some smarting pain is usually experienced, but this gradually subsides; and I am in general averse to prescribing any preparation of opium.

I almost invariably see the patient again in the evening, and with the greatest delicacy and care remove the dressing. The forehead, nose, cheeks, and lower eyelids are gently sponged with warm water, which affords the patient the greatest possible relief and comfort. It takes away the feeling of stickiness and stiffness, prevents undue heat, and affords the surgeon the opportunity of encouraging the patient by saying that all is doing well. The lower lid may be drawn down so as to separate it from the upper, but no attempt should be made to open the eye or inspect the wound; for if all is going on well, to open the eye would be running a needless risk, whilst any important accident, such as doubling back of the corneal flap (which, however, I have never known to occur with the linear



incision) or choroidal hemorrhage, would betray itself at an earlier period and render interference requisite. I usually see the patient and wash and dress the eye night and morning for three days, after which I only see him once a day for three days. At the expiration of a week he is allowed to dispense with the pad and to wear only the bandage, or even, if there be no inflammation, to wear a shade. The American shades lately introduced, composed of perforated brown canvas bound with an edging of brass and with two spring clips, answer well and are comfortable to wear. As a rule, quinine and iron or strychnia and iron is given twice a day for a few days, and the patient is directed to walk in the open air if the weather be tolerably fine. Glasses may be ordered for the patient after the lapse of a fortnight; and, with attention to conditions of astigmatism, vision may often be brought up to far greater perfection than was formerly possible with spherical glasses alone.—*St. Bartholomew's Hospital Reports*, vol. xvi., 1880, p. 211.

#### 56.—INFLAMMATION AND OTHER DISEASES OF THE IRIS.

By Dr. J. R. WOLFE, F.R.S.C.E., Lecturer on Ophthalmic Medicine and Surgery in Anderson's College; Surgeon to the Glasgow Ophthalmic Institution.

The iris is itself liable not only to various forms of inflammation, but also to any acute protracted disease affecting either the conjunctiva, the cornea, its neighbouring episcleral region, the ciliary muscles, or the anterior part of the choroid. When a foreign body is lodged for any length of time in these structures, you may always judge of the gravity of the case by the appearance of the iris—by its change of colour, by its dry look, by the sluggishness or irregularity of the pupil. The severity of every disease in, or accident to, these tissues is marked upon that membrane.

In your examination of the iris, (1) direct your attention to its colour. Compare it with the healthy iris, and see whether it has undergone any change, for inflammation changes blue into greenish, brown into reddish, grey into greenish-yellow colour. When blood is effused into the anterior part of the vitreous, the iris presents a peculiar green colour.

The arterial distribution will account for this change of the iris and its sympathy with the other structures. The anterior ciliary arteries which supply the four recti muscles perforate the sclerotic near the cornea, and upon the ciliary muscle they unite with the posterior (long) ciliary to form the arterial circle of the iris. Before penetrating the sclerotic the anterior ciliary gives off branches to the episcleral region and to the limbus

conjunctivalis, from which the cornea derives its principal nourishment. Hence, in disturbance of the circulation of either, blood is effused into the iris, the addition of which to its natural colour gives rise to the change in question. That the arterial relation is the cause of the change is evident from the fact that the posterior part of the choroid and optic nerve may be inflamed and the retina detached without producing any change in the colour of the iris or having any effect on the action of the pupil.

2. See whether the iris presents its natural glistening surface, or whether it has a dry look.

3. Examine the state of the pupil. Cover it with the eyelid for a little; then lift the lid and see whether it contracts readily, or whether it is sluggish in its movements.

4. Put in a few drops of atropine solution, and see how it responds to the action of the mydriatic. Does it dilate regularly, or is the pupil drawn to one side? If the latter be the case, is there adhesion to the lens-capsule or merely thickening of the undilatable segment? Direct a pencil of light upon the pupil, and see whether there are any black or brown spots upon the capsule indicating a former attack of iritis or old adhesions.

5. Examine the pericorneal region. When the iris is inflamed there is an injection round the cornea. This may be very slight. The chronic form of inflammation, indeed, may creep on without any, or with imperceptible, pericorneal inflammation; but in every acute attack there is a rosy zone of parallel vessels closely ranged round the cornea; they are situated behind the conjunctiva. There may also be chemosis, which is sometimes very considerable, especially in traumatic, but rarely in idiopathic cases; so that the limbus is raised like a red or bluish-red ring round the cornea. The swelling of the conjunctiva may go on to a considerable extent, and involve the sub-conjunctival tissues and upper eyelid, which also become cedematous.

This is a general outline of the local symptoms of inflammation of the iris. In an acute attack of inflammation we have, besides, the following

*General Symptoms.*—There is lancinating pain, situated at first in the interior of the eyeball; then it extends to the forehead, temple, and gums, and to some other branches of the fifth nerve. When accompanied with throbbing it shows an unfavourable condition of things, for when long continued it is generally a sign of the commencement of suppuration. When there is violent pain in the back of the head, it shows the presence of irido-choroiditis. The pain increases towards evening. Sometimes it commences at midnight and lasts till morning,



when it has assumed the character of a dull aching pain in the eyeball, and is occasionally of a lancinating nature. These nocturnal exacerbations may cause constitutional disturbance—feverishness and impaired appetite, and in children cerebral disturbance may be produced.

Photophobia and lachrymation are rarely altogether absent, but are generally very slight, and never in the same degree as in corneitis.

*Forms of Iritis.*—The different forms of inflammation of the iris may be divided into—1. Hyperemia of the iris; 2. Plastic iritis; 3. Serous iritis; 4. Parenchymatous; 5. Syphilitic.

Simple *Hyperemia of the Iris* is caused by irritation of those parts which have an arterial relation to the iris. It is characterised by pericorneal injection, and the changes of colour just mentioned are particularly well marked on account of the clearness of the aqueous humour, which undergoes no change in hyperemia. There is also sluggishness of the pupil. The line of demarcation, however, between simple hyperemia, and change in the stroma of the iris is so faint that it is sometimes difficult to say when the one ends and the other begins; the same case may one day be simple hyperemia, and the next acute inflammation of the iris. In speaking of the different forms of conjunctivitis, I told you to take traumatism as a type, the different degrees of inflammation depending on the character of the particles by which the conjunctiva has been irritated and the extent to which they are entangled by it, this forming the measure of the extent of inflammatory effort required to extrude them. The same applies to iritis. When a foreign body is lodged in the corneal epithelium, there is inflammation of the conjunctiva. When the foreign body is lodged in the cornea proper, the inflammation extends to the ciliary circle and iris, and we have hyperemia. This condition, when long protracted, leads to a change in the stroma of the iris—exudation of fibrine. When the foreign body is lodged in the ciliary circle, the transition from hyperemia to suppuration is very rapid. The following is a case in point:—

*Foreign Body lodged in the Ciliary Region, looking to the Aqueous Chamber.*—James C., aged twenty-one, iron-dresser, was admitted into the Ophthalmic Institution on the evening of September 14, 1880, with a piece of steel casting in his left eye. The foreign body struck the cornea a little below the centre and in a downward slanting direction, traversed the aqueous chamber and became entangled in the ciliary region. A small glistening part of the steel could be seen upon the ciliary margin of the iris; this was two hours after the occurrence of the accident. The aqueous humour was clear and the iris slightly hyperemic. The eye was dressed and the patient sent

to bed. Next morning we found the iris thickened by exudations, and the pupil immovable. A thin membrane had already formed, which filled the whole area of the pupil. The foreign body could not be seen, being enveloped in a greyish membrane. Indeed, this was the beginning of the suppurative stage. The steel was extracted, and two days later we found a small quantity of pus at the site of the injury.

You have also frequently had occasion to notice, in cases of comparatively slight accidents to the cornea with pieces of coal, how rapidly the inflammation spreads to the iris, and produces hypopion.

Bearing these facts in mind, you will be able more readily to appreciate the nomenclature generally adopted by systematic writers. You will take them as broad landmarks to guide you in your study, but you will understand that there are many intermediate stages, presenting characteristic features which cannot be limited to any one of these classes.

*Plastic Iritis* is characterised by an effusion of plastic lymph at the edge of the pupil and into the stroma of the iris. The exudation may extend to both surfaces of the iris, and to the aqueous humour, which becomes turbid. The pupil becomes cloudy, and is covered by a thin web of fibrine, hence we find loss of brilliancy of the iris, which has a dry look. Immobility of the pupil is more complete than in hyperemia, but change of colour is not so well marked, on account of the turbidity of the aqueous humour, and also on account of the change in the stroma of the iris. This condition, when pushed to any extent, or when not relieved by mydriatics, may lead to permanent adhesion of the iris-circle to the lens capsule (*synechia posterior*), and the pupil may become obliterated.

*Serous Iritis: Dropsy of the Aqueous Chamber.*—In this form of iritis there is a hypersecretion of the aqueous humour, instead of a fibrinous exudation. It generally pursues a chronic course. Pericorneal injection is less marked than in the plastic form, the aqueous humour is less turbid, discolouration of the iris is slight, the pupil is slightly dilated and pushed back by the aqueous humour, hence there is a deep anterior chamber; the Descemet membrane is cloudy, and sometimes assumes the form of punctative keratitis; tension of the eyeball is increased. It is this increased tension of the eyeball which renders this form of iritis very dangerous, for if not arrested it may give rise to irido-choroiditis and to glaucomatous complications.

*Parenchymatous Iritis* consists of a swelling of the membrane and hypertrophy of its cellular elements. New-formed blood-vessels appear upon its surface, along with small papilliform elevations. The colour of the iris, although changed, is not so well marked as in hyperemia. This form has a great tendency



to be followed by posterior adhesions, which take place at the various elevated points, and sometimes by suppuration, which pursues a very rapid course.

*Syphilitic Iritis* is only another form of the parenchymatous variety. Its chief distinctive characteristic is, that instead of the whole iris being studded over with excrescences, the disease is confined to one or two single spots, whilst the rest is of perfectly normal appearance. One-fourth or one-half of the iris is changed in colour and swollen, bloodvessels formed upon it, then small elevations are formed, called condylomatous nodules or pustules. These pustules may occupy any part of the iris, and the pupil may be dragged towards that part. Virchow has described condylomata as gummy tubercles. This has subsequently been confirmed by Colberg, who found that they were composed of a cellular element of new formation with a large number of free nuclei surrounded with a mass of blastema. There were also some spindle-shaped cells disposed in lines, the vestiges of vessels in process of formation. Syphilis may give rise to serous or other forms of iritis, but these pustules or condylomata of the iris are so characteristic, that whenever a patient presents himself with such a form of iritis, you may safely ask him when he had a chancre, and you will find either that he is at present suffering from a primary sore, or that he suffered some time ago, and had been improperly treated, or not treated at all.

It is astonishing how little photophobia or lachrymation there is some of these cases, especially at the commencement of the affection. Some of the outdoor patients at the hospital get cured without being confined a single day to the house; but when neglected, and the disease is allowed to run its course unchecked, the inflammation extends to the ciliary circle, and then there is the accession of all the symptoms of acute iritis. The same is the case in a relapse. There is besides, in these neglected cases, the risks of its extending to the choroid and retina, and terminating in choroido-retinitis.

*Cause.*—I have already mentioned to you incidentally that iritis may be caused by injury to the iris itself, or to those parts which stand in arterial relation to it. With regard to the iris itself, iridectomy, etc., show us that the iris may be cut, and a portion of it removed, with perfect impunity; but when it is lacerated, bruised, or strangulated in a wound, or caught in a cicatrix, the danger is great, not only to the deep structures of the same eye, but to those of the other eye. I shall return to this subject in our consideration of sympathetic inflammation.

Idiopathic iritis may attack persons of all ages. Syphilitic and gouty-rheumatic and strumous subjects are most liable to it.

Among the exciting causes may be mentioned—exposure to sudden changes of temperature, cold draughts, a severe drenching. Anxiety, grief, and sleeplessness may induce it in persons predisposed to congestion of the internal structures of the eye.

*Treatment.*—Our efforts must be directed to obviate the tendency to adhesion, to effect which we have a powerful agent in atropine. Von Graefe and Donders have shown how rapidly this substance is absorbed by the tissues. The aqueous humour drawn from an atropinised eye of a rabbit contains as much of the alkaloid as is sufficient to produce mydriasis in another animal. In recent cases of iritis, when the adhesions are fresh, we find that the instillation of the atropine solution breaks up the adhesions and the fibrinous exudations in the area of the pupil, and puts the eye at once in a favourable condition towards resolution. The solution in cases of iritis must be strong (six grains to the ounce), of which six drops three times a day. The eyes should be kept closed, and painted over with the extr. belladonnæ, or grey ointment may be applied to the eyebrow or temple.

Von Graefe, Desmarres, and all eminent ophthalmologists recommend leeches to the temple. It is generally thought that the abstraction of blood facilitates the action of the atropine and that of other remedies; but I have no experience of leeches. Laxatives I consider of great importance as favouring the action of both local and internal remedies. I generally begin with the administration of pil. hydr. gr. vij., or colocyn. gr. v., or ol. ricini, according to circumstances, followed by warm drinks and foot-baths to promote the action of the skin. This treatment, followed up by a mild mercurial course consisting of pil. hydr. gr. iss., quinquæ gr. j., three times a day, is generally sufficient in the course of a week or ten days to prevent complications. When adhesion has already taken place I moderate the atropine solution, which I administer only once a day, and the eyelid is kept painted with the extract of belladonna.

To all questions as to what the patient is to drink, my answer is that he must observe strict total abstinence. This rule must be strictly adhered to in all the internal affections of the eye.

With regard to operative interference, I see a large iridectomy recommended by one writer. My opinion is that such an operation ought never to be entertained. Do not touch an iris in a state of inflammation, or you will find that it will resent your interference, and the pupil you have made will soon close. Let it heal first. If you cannot prevent adhesion by medical treatment, let it take its course, and you will have an opportunity some six months later to operate for artificial pupil with more



chance of success. A paracentesis may be necessary when you see that the iris has a tendency to suppurate. In serous iritis paracentesis is not only desirable but absolutely necessary, and sometimes two or three repetitions of the operation may be required to prevent the dropsical infiltration extending to the choroid. But an eye affected with syphilitic iritis should not be touched with an instrument on any account, not even for the performance of a simple paracentesis.

In cases of syphilitic iritis, I adopt the following course: After the administration of pil. hydr. c. colocynthidis, I order small doses of ol. terebinth.—one teaspoonful three times a day in syrup. aurantii. It was recommended by Dr. Carmichael, and was the favourite remedy of Dr. M'Kenzie. This I continue for three or four days, with warm drinks, foot-baths, etc. Then I order pil. hydr. c. quinæ three or four times a day, and the unguent. hydr. fort., into the armpit, 3 j. every evening; warm baths twice a week. When the gums begin to get tender, I discontinue the pills, and only apply the unguent. hydr. to the axilla, and internally potassium iodide is ordered. Should symptoms of mercurialisation supervene, I discontinue the ointment and keep the patient exclusively to potassium iodide, which may be given ℥j. three times a day. The strong atropine solution, with the grey ointment, is continued for a considerable time. The drops may even be persevered with for a month after the general inflammatory symptoms have disappeared.—*Medical Times and Gazette*, Dec. 25, 1880, p. 719.

#### 57.—ON THE TREATMENT OF AURAL POLYPI BY RECTIFIED SPIRITS.

By P. M'BRIDE, Esq., M.B., F.R.C.P.E.

In the early part of last year I found that Dr. Miller of Edinburgh had successfully treated nasal polypi by a spray of rectified spirits. Now, alcohol has for some time past been used as a remedy for chronic suppurative otitis media with considerable success and with perfect safety. In the *Lancet* of 1874 Dr. Cassels pointed out that the cases of otorrhœa which are most suitable for this treatment are those in which the mucous membrane of the tympanum is red and granular—in fact, in a condition of polypous hypertrophy. It seemed, therefore, to be a justifiable experiment to test its effects on true polypi. Of course, where at all practicable, it is always advisable to remove the growth as soon as possible; but after this has been done, it has been the practice to cauterise the pedicle at short intervals to prevent recurrence. Then, again, one not unfrequently meets with cases where, from extreme youth, nervous-

ness on the part of the patient, or from the position and shape of the polypus, it is difficult to effect its removal.

Now, it was evident that if rectified spirit proved as effectual in the treatment of aural as in nasal polypi it supplied two desiderata. In the first place, after the removal of a polypus, it would prevent its recurrence; and being a remedy which the patient can apply at home, it would do away with the necessity for the constant visits to the surgeon which cauterization of the pedicle necessitated. In the second place, it would afford a means of treating those cases where, for some of the aforesaid reasons, it is difficult to operate without a certain amount of risk.

In preventing the recurrence of polypi after removal, I have found it tolerably successful in those cases where the treatment was carried out carefully by the patient. In two cases (dispensary patients) where it seemed to have failed, there was every reason to suspect that neither the cleansing of the ear several times a day nor the application of the spirit was carried out, as in both cases, when the patients returned with fresh polypi, the ears were full of foetid discharge, and had a generally dirty appearance.

In one case an opportunity was afforded of watching the effect of spirituous instillations on a polypus of large size. It occurred in the ear of a young woman who would not consent to have it removed. The growth was so large as to fill the whole bony meatus. Instillations of rectified spirit thrice daily, to be diluted with water at first, but gradually to be strengthened till the pure spirit was used, were ordered. The result was that in a few weeks the growth was half its original size, and in about a fortnight more it was so small that it was altogether behind the tympanic membrane. It could, however, be seen, and felt with a probe, through a perforation of about the size of a pea. After this it seemed to decrease more slowly. At the patient's last visit it was still present, although the otorrhœa was very slight, and the hearing had improved. This case proved the fact that alcohol has a very decided influence on aural polypi. Granulations in the meatus and on the tympanic membrane it also acts upon, but these not unfrequently disappear under the application of sulphate of zinc and carbolic acid (grains 5 of each to ʒj. of water). The mode of using these instillations is similar to that of applying ear-drops generally, but it is well to dilute the spirit for the first few applications. Very excessive pain has not been complained of by those to whom I have prescribed it.

As regards the action of alcohol on the polypus, it is probably a double one. These growths are very oedematous, and consequently a large proportion of their bulk consists of water.



Alcohol has the property of abstracting this, and thus probably tends to diminish the size of the morbid growths. It also has the property of coagulating albumen, and it seems quite possible that it may thus act in some way as a check upon cell growth, but of this action it is difficult to speak with certainty.

In two cases, after long-continued use of rectified spirit ear-drops, circumscribed inflammation of the meatus set in. Of course this may have been due to other causes, but still I felt rather inclined to ascribe the result to the alcohol. It seems quite possible that the latter, by virtue of its property of coagulating albumenoids, may produce obstruction of gland ducts, and so cause circumscribed areas of inflammation. We know that strong solutions of alum applied to the ear are apt to set up furuncles in the meatus.

Last July, Professor Politzer of Vienna published a paper on the use of alcohol in the treatment of aural polypi; but as I had begun to use it before that date, and as Dr. Politzer's communication was the first that has appeared on the subject, I have thought it well to give my experience, which agrees in many points with his, and also how I was led to adopt this plan of treatment through Dr. Miller's communication.

The morbid anatomy of true mucous polypi is the same in all parts of the body. Round cells, which sometimes lengthen out into fibres, and occasionally degenerate into myxomatous tissue, constitute the growth. Not unfrequently we see all three modifications in sections of the same growth, with transition shapes between round and spindle.

The instillations should be made two or three times a day, after the ear has been carefully cleansed by means of a syringe, or better still, by instillation of a solution of bicarbonate of soda, followed by syringing, and then dried by means of a long thin plug of cotton wool or lint. The spirit may be diluted for the first one or two applications, but gradually strengthened till it is used pure.—*Edinburgh Med. Jour.*, April 1881, p. 900.

---

#### DISEASES OF THE SKIN.

---

#### 58.—ON A NEW METHOD OF PERFORMING PLASTIC OPERATIONS.

By Dr. J. R. WOLFE, F R C.S.E., Surgeon to the Glasgow Ophthalmic Hospital, &c.

I may say, at the outset, that my plastic operation is not skin-grafting, as introduced by M. Reverdin; nor cuticle-scraping, in which the little bits are said to be dissolved, and then to grow up again; but it consists in the transference of skin-flaps, cut to shape from any part of the patient's body, or

from any person who feels disposed to make a present of a portion of his skin, to supply deficiencies elsewhere. The practical importance of this operation is evident when we consider that it saves cutting a flap from the face to mend the face, in which case, if the operation be unsuccessful, we only introduce a new scar.

*Case.*—Mrs. M., aged 30, fell into the fire in a fainting fit, three years ago, and got her face and left eyelid severely burned; the temporal bone was laid bare; the lower eyelid was dragged downwards and outwards; the conjunctiva exposed to its *cul-de-sac*; and the lower canaliculus pulled about half an inch from its normal position. This accident not only caused a deformity of the face, but also produced dryness of the conjunctiva, especially at its outer angle, where the membrane had assumed a xerotic appearance. The eyeball was exposed, and was thus rendered liable to attacks of inflammation. Owing to the awkward twist of the eyelid, and to the total obliteration of its border, I considered the case very unpromising, and therefore avoided the operation for a considerable time; but ultimately, when it was represented to me that family considerations made the patient exceedingly anxious to try the effect of an operation, I consented to give her a chance.

The operation was performed in the following manner. I began paring away the edge of the upper eyelid at the inner margin, keeping clear of the eyelashes, and opened the obliterated canaliculus, into which I introduced a thin probe, pushing it horizontally into the lacrymal duct. I then made a curved incision a little beyond the puckered edge of the cicatrix, and dissected up the eyelid, liberating it from the malar bone, to which it was adherent. Having introduced my finger into the conjunctival sac to make sure that the whole tarsal cartilage and orbicularis muscle had been liberated, I pushed the probe into the nasal duct to serve as a guide in retaining the lids in apposition, and at the same time to keep the canaliculus out of harm's way. The edge of the lower eyelid being also pared, four ligatures were introduced through the upper and lower eyelids, and tied together. The hardened subcutaneous cicatricial tissue was cleared away, and the whole extent of the gap exposed. Having taken a shape with a piece of lint of the flap required, I carefully dissected a piece of skin from the forearm, cutting it larger than the necessary shape all round, so as to allow for shrinking; I then turned up its deep surface, and with a pair of flat sharp scissors pared off every vestige of subcutaneous tissue, so as to leave a white appearance. It was then applied to the gap in the eyelid, to which it was united by fine silk ligatures. After pressing and moulding it into its new place,



lint soaked in hot water was applied to its surface for about ten minutes. It was finally dressed with lint wrung out of hot water; over this, four folds of dry lint were placed, and the whole covered with fine gutta-percha tissue, and secured by an immovable bandage. On the third day the dressing was removed and it was found that adhesion had taken place; the flap looked clean and dry, the temperature being slightly above that of the neighbouring part.

What was most remarkable in this case was, that the transferred flap was not looking white, but quite normal; bluish lines were visible here and there. The same dressing was repeated daily. The ligatures were removed from the flap, and also from the eyelids, on the eighth day, when the flap was found to have assimilated in appearance to the neighbouring skin. Only a small inner segment of the cuticle had become slightly elevated; the rest of the cuticle showed no tendency to peel off. On the fifteenth day, I separated the eyelids; the lower was rather stiff at first, as if unaccustomed to its new covering and position, but gradually it assumed its normal appearance.

The success of the operation materially depends upon every step of the operation being carried out to its minutest details. Seeing that such an operation takes more than two hours for its proper performance, we shall never be able to exercise sufficient patience, unless we start with the conviction that scrupulous attention in every point is essential. The eyelids should be carefully united, but not too tightly, else they will tear asunder; the wound must be properly cleared of cicatricial tissue; the size of the flap should be sufficiently large to allow a certain degree of shrinking; the forearm from which it is taken should rest in semi-supination, so that the skin may not be stretched; and the flap should be cut round the shape of lint larger than the required measure, and every vestige of its binding tissue carefully removed.

In my first operation, the skin of the face was dissected all round, and served as a frame under which the new flap was inserted, and by which it was held in its place without ligatures. The dressing consisted of dry lint; but I think Dr. Martin's recommendation of hot dressing is a decided improvement; and I have gradually been reconciled to the use of very fine ligatures. The patient is kept warm in bed, the head well covered, both eyelids closed, and generous diet is allowed. I do not employ antiseptic dressing now, because I consider it desirable to keep the cuticle from peeling off, and I am rather afraid that carbolic applications might have that tendency.

Considering the short period which has elapsed since I introduced the operation to the profession, and the favourable reports received from different countries, I think it is deserving of further cultivation.—*Brit. Med. Jour.*, March 19, 1881, p. 426.

## 59.—TREATMENT OF PSORIASIS BY PYROGALLIC ACID.

By Dr. GEORGE THIN, London.

The first notice of the curative effects of pyrogallic acid as an external application in psoriasis is, I believe, to be found in a paper by Jarisch, in which a ten per cent. ointment, to be applied twice daily, is recommended, the ointment to be kept in contact with the skin by a bandage in inveterate cases. Jarisch found its use attended with no inconvenience, and states that the discoloration of the skin which it causes is removable by benzole and by dilute acids. The utility of pyrogallic acid in psoriasis has been supported by the testimony of Kaposi, who has warmly recommended it, more especially for cases of psoriasis universalis.

Before trying it on my own patients I became, however, aware through a case reported by Neisser, to which I shall again refer, that its application to a large surface might be attended with danger, and feeling satisfied that it is never justifiable in the treatment of ordinary cases of psoriasis to subject a patient to any risk, however insignificant, I commenced by using it over a very small extent of surface at a time. A slight experience of this treatment was sufficient to satisfy me that we had become possessed of a powerful agent for the treatment of psoriasis, and one that is not attended by the inconveniences that are associated with the use of chrysophanic acid. I accordingly availed myself of a favourable opportunity for testing its action, as compared with that of some of the more commonly used stimulants which are applied to the skin in psoriasis, and now propose to record the results of the experiment.

A young gentleman, aged twenty, consulted me in March 1880, for a psoriasis of long duration. He intended going abroad for a period of years, and was desirous of ascertaining the best method of keeping his disease in check without resorting to repeated courses of arsenic. He therefore willingly accepted my suggestion of trying the effects of different applications on different patches.

The disease first appeared on his elbows when he was five years old. When he was twelve the knees became affected. In his eighteenth year the disease became more general, patches developing on the legs, abdomen, back, and arms. When I saw him I found the knees and elbows affected with patches, varying in size from that of a shilling to the palm of the hand, on various parts of the body. They were mostly about two inches in diameter and rounded in form, and were well-marked examples of the disease, a slightly bleeding surface being left when the scales were forcibly removed. The other applications with which the pyrogallic acid was to be compared were frictions with soft-soap twice daily, the frictions on a number of selected patches



being followed by the application of white precipitate ointment and *huile de Cade* respectively. A complete cure was not obtained by these applications on any one patch, although an apparent attempt at recovery followed all of them. Thus the elbow and knee of one side were treated by the soap frictions and white precipitate ointment, and those of the other side by soap and tar (*huile de Cade*), from March 19 to October 21, continuously and actively, with great amelioration of the condition of the skin, but without a complete cure. Patches on the abdomen and back were similarly treated for a number of consecutive weeks, again with progressive amelioration, but the progress was so slow that, in deference to the wishes of the patient, the pyrogallie acid ointment was substituted. The pyrogallie acid was first applied to an oval patch on the left leg, which was about four inches long and three inches broad, an ointment composed of one part of the acid to ten of lard spread on lint, being laid on it twice daily. After three days' application the local irritant effects produced were sufficiently severe to induce me to discontinue the remedy for the time being. The treatment of the patch was resumed after some weeks with a weaker ointment, one part of the acid to twenty of lard. In six days the patch looked much better, and within a fortnight it was well.

In order to avoid any possible ill effects from the acid a few patches only were treated at a time. Those on the abdomen were attacked first, and then those on the back, and finally those on the limbs. The treatment was begun in the end of May, and by the end of July all the patches, except one or two on the back, had been cleared, and these soon yielded when they were taken in their turn. Finally, on October 21, the elbows and knees, which had so long resisted the patient treatment by soft soap, white precipitate ointment, and tar, were attacked by the pyrogallie acid in the same strength of one in twenty, and were speedily cured.

The curative action of pyrogallie acid is due, I believe, simply to its irritant qualities, and to certain properties as an irritant in regard to which we are ignorant. The irritant effects are most conspicuous around the hairs, each hair-follicle being the seat of a small brown patch, which, when it is scratched off, often leaves an abrasion in its place. At one stage of its curative action the mode in which the psoriasis patch enlarges is well illustrated, the dull-brown epidermis which marks the extent of the diseased surface being bounded by a thin red margin. This thread-like border corresponds to the vascular congestion produced in the bloodvessels by the extension of the psoriatic epithelium.

Kaposi has treated patients who were subjects of universal

psoriasis by an ointment of pyrogallic acid applied to the whole surface of the body, and remarks in his recent handbook regarding the "alarming appearance of strangury and excretion of olive green to tarry urine, with symptoms of moderate fever and prostration, by many patients whose whole bodies had been repeatedly covered by it." Neisser recites a case in which a patient died from its effects. The patient, a man afflicted with psoriasis universalis, after a warm bath with soft soap, had an ointment of pyrogallic acid applied to the left side of the body and to the surface of the chest. In two hours he became unwell, and had diarrhoea, and four hours later rigors, collapse, high temperature, and tremor set in. After a remission there was in forty hours a repetition of the attack, and he died comatose. There was anuria for the last twelve to eighteen hours. During the sixty hours of illness only 1600 cubic centimetres were secreted, the urine affording a marked example of hæmoglobinuria.

It is clear that the remedy is one to be cautiously handled, but it is equally clear that, used in the strength employed by me in the case which I have related, and used over a small extent of surface at a time, it can be employed not only safely, but conveniently and successfully.—*Lancet*, April 9, 1881, p. 576.

---

60.—CASE OF LUPUS TREATED BY SCRAPING WITH VOLKMANN'S SHARP SPOON.

By RICKMAN J. GODLEE, Esq., M.S., F.R.C.S.Eng.

The employment of Volkmann's sharp spoon for the treatment of lupus is likely to meet with more and more general acceptance. It presents several advantages over the older methods of dealing with these painful cases, which indeed are for the most part so unsatisfactory, that surgeons are often tempted to abstain altogether from interference of any kind. The principal merits claimed for this way of treating the disease are, in the first place, its extreme simplicity, and in the second, that it is possible to tell with great accuracy when the limits of the affected parts have been reached. A tolerably sharp spoon should be used, with a short strong handle, and the affected surface should be scraped until all the soft tissue has been completely removed. Nothing is more easy than to tell when healthy structures have been reached, by the sense of resistance they offer; and, unless an unreasonable amount of force be employed, these cannot be materially injured. If an extensive surface has to be scraped, an assistant is necessary, as considerable capillary hemorrhage frequently occurs. The following method of procedure will be found effective in checking the bleeding. Several strips of lint having previously



been prepared, the surgeon rapidly scrapes a patch, not larger than can easily be controlled by a dossil of lint of a suitable size; this is firmly pressed upon the raw surface, and then another is dealt with in the same way, and a second piece of lint is applied. The process is then repeated until the whole of the affected part has been rendered raw. The pieces of lint are then, one after the other, removed, and if the bleeding has not completely stopped it will be found that a little iodoform powder dusted on the spot quickly arrests it in most cases; but if this should not be the case it is only necessary to continue the pressure for a few minutes longer. A very comfortable and satisfactory dressing for the after-treatment is an ointment formed of iodoform, eucalyptus oil, and vaseline, in the following proportions:—Iodoform, gr. xx.; eucalyptus oil, 3 j.; vaseline, 3 j. This preparation, it may be mentioned, is a very useful one in many forms of ulceration accompanied by a foetid discharge. It is powerfully antiseptic, and at the same time extremely bland, so that it allows healing to go on rapidly beneath it. The ointment may be spread conveniently on thin rag, which adapts itself readily to the inequalities of the face, or, if a larger supply be advisable, it may be put upon the surface of a piece of lint. In all the instances to be described the same method of treatment was pursued; besides presenting several features of some little interest, they serve to show how rapidly severe cases of lupus may be, if not cured, at least very much relieved for a considerable length of time, and the disease held very much in check. Some of them also illustrate the fact that when the morbid condition appears to be quiescent, plastic operations may be undertaken without fear that the lupus ulceration will affect the flaps or interfere with their union.

*Case 1.*—E. K., a woman twenty-three years of age, was admitted into University College Hospital in August 1880. Her face was extensively scarred as the result of lupus, which had involved both sides of the face, destroying a considerable part of the alæ of the nose, and ultimately causing a solution of continuity in the already attenuated columella. The latter had seriously increased the patient's deformity, and gave rise to a troublesome chronic catarrh of the Schneiderian membrane. Several small patches of softening tubercles were scattered through the old cicatrix. The softened patches were freely scraped with the sharp spoon, and a new columella was fashioned by refreshing the parts which corresponded to one another of the original columella, as well as the left side of each of these small processes; a narrow flap was then raised from the margin of the left nostril, and by twisting it round and bringing it over towards the right it was made to fit

against the newly formed columella. The parts united well, and when the patient was seen last, towards the middle of December, not only had she a firm and apparently homogeneous columella, but it was quite impossible to detect the spot from which the flap had been taken, and, moreover, the tendency to catarrh had passed away, and with the exception of one small spot on the left cheek, and one on the nose, no sign of activity of the lupus remained.

*Case 2.*—A. F., a delicate woman aged about thirty-five years, had a small patch of lupus sebaceus below the left eye, about an inch and a quarter long by half an inch broad. It had been growing very slowly for a considerable time; distended sebaceous glands were seen throughout the patch. This was freely scraped in August, 1880, and treated like the other cases. The patient returned into the country, and was therefore not watched through her convalescence; but from her own account the scraped surface was not completely cicatrised for some weeks. In October, 1880, she returned with a firm smooth scar at the seat of the lupus patch, perhaps somewhat more raised and harder than one would have wished to see it.

*Case 3.*—A. B., a man aged about forty, had a circular ulcerated patch of lupus just above the left ala of his nose, of about the size of a shilling-piece. This had appeared six years ago, and had spread very slowly; the edges were somewhat indurated. As there was some suspicion that this might possibly be a rodent ulcer, a knife was employed to excise the base of it after the free use of the sharp spoon. This was done in August; in October he had a firm, healthy, depressed scar in the place where the lupus had been.

*Case 4.*—R. J., aged sixteen, a pale but moderately healthy boy, had a patch of lupus of very chronic nature on the right cheek, about two inches and a half long and a little more than an inch wide. This had been gradually spreading for six years; it presented a feeble cicatrix in the centre, surrounded by a margin of superficial ulceration covered by a scab. On October 23 the patient was put under the influence of nitrous oxide gas, and the whole surface freely scraped. This case well illustrated what is usually seen in these cases, that the disease had not extended through the whole thickness of the skin; the bases of the papillæ showing clearly throughout the granulating surface. Cicatrisation, nevertheless, took place almost altogether from the margin of the sore, and was complete by December 4; a firm and healthy scar remaining.

*Case 5.*—A. R., a woman forty-three years of age, had had extensive lupus of the face for the last five years, which had been treated with escharotics of various kinds. Considerable



destruction of the nose had occurred, and a lachrymal fistula had formed on the right side. In this case the greater part of the disease had been cured, and only a few spots remained to scrape. This was done in the early part of October. The scraped surfaces rapidly healed, and the patient herself was much pleased with the result; but it must be confessed that a few spots of suspicious appearance were to be seen six weeks after the operation.

*Case 6.*—H. A., aged twenty-three, a girl of remarkably strumous appearance, had suffered for seven years from lupus of the face, which had never been treated, and had resulted in considerable destruction of the nose, as well as in producing extensive scars on both cheeks; these had caused ectropion on both sides, causing very great deformity. In this case very extensive surfaces were laid bare by the scraping; in fact, the greater part of both cheeks was left raw. Healing took place from the edges with remarkable rapidity, but a few soft patches remained, which were again scraped before the patient left the hospital in July. The patient returned in November 1880, at which time the greater part of the cheeks was occupied by cicatrix, but in two or three small patches the disease had returned. She was very anxious that an attempt should be made to remedy the deformity produced by the ectropion, and accordingly an operation was undertaken on the right side, while at the same time the spots of recurrence were again scraped. A flap was turned in from the cheek after the lower lid had been dissected up, and healing took place rapidly. The result was a considerable improvement, but sufficient allowance was not made for the tense condition of the cicatrix; and the result, though a great improvement on the previous condition, was not perfect. A similar operation has since been performed on the left side with better success; but, unfortunately, this has been somewhat interfered with by an attack of erysipelas, to which the patient is peculiarly subject. This case is obviously a less hopeful one than the foregoing, and it can scarcely be anticipated that the disease will not again return. The following is also one of the less promising cases.

*Case 7.*—S. J. M., a delicate girl ten years of age, was brought by her mother, on account of a growth obstructing the left nostril, in the spring of last year. She had a large patch of lupus on the left cheek, reaching back to the ear and involving the lower part of the pinna. The growth in the nose was one of some interest; it consisted of a mass of soft granulations of the size of a nut, springing from a spot of lupus on the septum nasi quite distinct from the ulcerated surface on the cheek. The latter had an imperfect cicatrix in the centre, and a wide ulcerating margin covered by a thick

scab. On exerting pressure on the ala nasi, the mass in the nostril could be squeezed out, and readily became detached; its base as well as the cheek were very freely dealt with by means of the sharp spoon, and here again healing took place with very great rapidity, leaving an apparently healthy pink scar. No recurrence has taken place in the nose, but on several occasions spots have reappeared on the cheek, which have been treated in the same way as at the first operation; healing each time taking place very quickly. This patient, like the last, is very subject to attacks of erysipelas. On one occasion the internal rectus was divided on account of convergent strabismus, from which the patient suffered.—*Medical Times and Gazette*, March 19, 1881, p. 317.

---

61.—ON ANTHRAX AND ANTHRACÆMIA IN WOOLSORTERS, HEIFERS, AND SHEEP.

By Dr. JOHN H. BELL, Surgeon to the Bradford Infirmary.

For nearly forty years it has been known in the worsted district around Bradford, that sorters of alpaca and mohair not unfrequently died from a peculiar and rapidly fatal disease, the cause and nature of which were not understood. Although unaccountable, the deaths were generally certified as from ordinary forms of disease. Many deaths from this disease were not recognised as such, and when they were, single deaths with some weeks' interval were not much noticed; but, when three or four occurred within as many weeks, of men working in the same room or for the same firm, the sorters became alarmed; public interest was excited; *post-mortem* examinations, investigations, reports, and recommendations followed; but all ended without any satisfactory result. The number of deaths increased in proportion to the quantity and quality of these materials which were used. It appears strange that, during all this time, the knowledge of the existence of this disease should scarcely have passed beyond the immediate neighbourhood of Bradford; or that it has not been detected in other towns, where similar wools and hairs are used. I believe it will be found, if looked for, not only among hair and wool-sorters, but also among other workpeople who are known to suffer occasionally from anthrax or malignant pustule, which is the external form of this disease.

My attention was first directed to this disease three years ago, in consequence of a man whom I knew well dying within seventeen hours from the apparent commencement of his illness. He was at work in the morning; but, feeling weak, left during the forenoon, walked two miles and half to his home, went to bed, had no rigor, cough, pain, vomiting, or purging—only a



feeling of exhaustion, with quickened breathing, low external temperature, and collapse, terminating in death the same night. Since then, in consequence of repeated and positive statements in the local papers to the effect that these deaths might easily be prevented, several inquests have been held on some who have fallen victims to the disease; juries have made recommendations to employers; public attention has been aroused; numerous paragraphs and cases have appeared in the medical periodicals; the Local Government Board have sent down Mr. Spear to investigate and report upon it; the Bradford Medico-Chirurgical Society have appointed a commission to inquire into the causes, nature, prevention, and treatment of this and other allied affections; and Professor Greenfield is doing important work in his special department; so that by-and-by we expect to have full and reliable knowledge respecting it.

During the last few months, I have seen several cases of external anthrax in persons who have come into contact with mohair or dry wools. This has not previously been associated with "woolsorters' disease"; it is, however, the local or external form of this disease, and is caused by the introduction of the poison at the part affected. The constitutional form of anthrax, as it affects woolsorters, is not generally attended by external or internal pustule. It is a general blood-disease, caused by the introduction into the circulation of the spores of the *bacillus anthracis* derived from the fleeces of animals which have died from this disease. As there is no anthrax, I have called the disease anthracæmia. It is sometimes epizootic in the countries where these hairs and wools are grown. It affects persons who come into contact with the animals; but their illness and rapid death are not attributed to this cause. The blood of a person suffering from woolsorters' disease or anthracæmia, when injected under the skin of a rabbit or other animal, produces death in two or three days; and the blood of these, when examined shortly after death, sometimes swarms with the *bacillus anthracis*.

As illustrations of different forms of woolsorters' disease, I will mention very briefly some cases which have come under my notice during the last two months.

*Case 1.—External Anthrax without Constitutional Symptoms.*—J. G., aged 36, for three months had been sorting Persian and Bokhara wools. On Tuesday, June 15, he noticed a small pimple or heatspot on the outer surface of the left arm, over the elbow-joint. On the fourth day, it was inflamed and painful. On the seventh day, there was a bulla one inch in length, three-quarters in breadth, with an irregular outline, and a dark-coloured base. For an inch and a half surrounding this, the tissues were hard. The skin was inflamed upwards to near

the shoulder, downwards to near the wrist, and extending two-thirds round the arm. He did not complain of feeling ill. Pulse 68. He slept well, took his food as usual, and walked out about home. Two days afterwards—that is, on the ninth day—the bulla had gone, and a black eschar remained; but surrounding this was a rim of small vesicles, which disappeared in a day or two. The inflammation rapidly subsided, and the eschar separated. When convalescent, his pulse was 68—the same as when the arm was most inflamed. Fluid taken from the bulla on the seventh day contained a few bacilli. Tubes were sent to Professor Greenfield, who reported that “inoculation with the clear serum produced anthrax in a guinea-pig, which died fifty-four hours after inoculation.” Blood taken from the indurated tissue immediately surrounding the eschar did not appear to contain any bacilli, and immediate inoculation with it failed to produce any effect.

*Case 2.—External Anthrax with Severe Constitutional Symptoms.*—W. E., aged 15, was employed about a mill where mohair was used, which had recently been fatal to several sorters. On June 23, 1880, during dinner-hour, he went into the sorters' room to see his brother, and feeling tired, lay on some Van mohair. Two days afterwards, he experienced a slight tickling sensation on the left temple; and on the seventh day a small pimple appeared. The eyelids, side of the face, and neck were much swollen. He went to work, but could not continue it. On the ninth day, he was very ill, and Dr. Logan of Bingley was sent for. He had then a vesicle of the size of a sixpence, with a dark base, on the left temple, one inch from the external canthus; much swelling of eyelids, parotid and submaxillary glands. Pulse 130, with delirium. In a few days, the severe symptoms declined; the swelling gradually subsided, and the eschar separated. This local form of anthrax in woolsorters and others who come into contact with hairs and wools is rare; but fatal cases have recently occurred. The more common form of “woolsorters' disease” has no local manifestation; but, as it is produced by the same material as anthrax, I have called it anthracæmia. When the poison is introduced through the lungs, it produces pulmonary anthracæmia; when through the alimentary canal, it produces enteric anthracæmia.

*Case 3.*—J. G., aged 49, a mohair-sorter, on July 17, got wet, and thought he had taken cold, as during the following few days he felt sickly, and his bones ached. On July 22, he left work about noon; went home to bed; said he ached all over. He had no sharp pain, but had slight cough, some expectoration, oppression at the chest, and did not sleep much. The following morning, he sent for his doctor, who visited him at



ten o'clock. He was perspiring freely; pulse small, rapid, and intermitting; hands cold; mind clear. He died about noon, twenty-four hours after leaving work. A *post-mortem* examination of the body was made by Mr. Spear, the Medical Inspector of the Local Government Board. Bacilli were found in the blood and other fluids.

*Case 4.*—S. F., aged 33, a mohair-sorter for the same firm as the man whose case I have just given, on July 25, 1880, complained of being unwell, and said he had an aching pain across his chest. On the second day, he was easier, but had a slight cough. On the third day, he was seen by several doctors, some of whom thought he had a little pneumonia, but certainly not "woolsorters' disease." Pulse 130; respirations 24; temperature 101.6°. Lungs fairly resonant; right somewhat duller than left; vesicular sounds subdued and distant; no bronchial or moist sounds. He died twelve hours afterwards. A *post-mortem* examination of the body was made twenty-nine hours after death. The external discolorations peculiar to blood-poisoning were present. The right side of the chest contained four pints of clear, pale, straw-coloured serum. The posterior part and base of the right lung were inflamed; the bronchial glands on the right side much enlarged and soft, containing fluid of a dirty colour. The mucous membrane of the trachea was of a dark claret colour. The pericardium contained six ounces of fluid. The valves of the heart and the lining of the large vessels were stained of a bright cherry-red colour. There were no decided subserous blood-spots, but some ecchymoses. The spleen was somewhat larger and softer than natural; other viscera normal. Blood taken from the finger twelve hours before death did not appear to contain any bacilli. None were found in serum removed from the chest by hypodermic syringe twelve hours after death. Fluids removed at the *post-mortem* examination were found to contain very numerous non-motile bacilli.

I must now conclude with a word or two on anthracæmia from mohair in heifers and sheep.

At a village in the neighbourhood of Bradford, where several sorters have lately died from woolsorters' disease, the hot water or sud after washing the mohair is run into tanks and neutralised by sulphuric acid to extract the grease. The water then passes into the common drain of the village, and is utilised to irrigate some fields near.

During the second week of May last, five healthy heifers (of a herd of twelve), which had been in adjoining fields for the previous three months, were turned into the sewaged pastures. In about three weeks, one of them died after a few hours' illness; and three others were ill, but recovered. The sewage was sus-

pected; four other heifers were added, and they were allowed on the sewaged fields twelve hours daily. On June 29, the remaining heifer of the first lot which had not been ill died suddenly, after a short illness. They were then all removed from these pastures; and on July 4, six days after removal, a third, which had not been previously ill, died similarly. During the same period, several sheep were found dead in the fields.

*Post-mortem* examinations were made of several of the carcasses of the heifers and sheep. The blood and fluids were found to swarm with the bacillus anthracis, the spores of which are supposed to have been derived from the mohair, and conveyed with the sewage to the land. They then gain access to the alimentary canal with the food and drink, and develop what I have called enteric anthracæmia, because the pathological changes are mostly found in the intestines and spleen.—*British Medical Journal*, Oct. 23, 1880, p. 656.

## 62.—ON THE TREATMENT OF RINGWORM.

By MALCOLM MORRIS, Esq., F.R.C.S., Joint Lecturer on Dermatology at St. Mary's Hospital Medical School.

Let us consider for a moment what are the fundamental points to be held in view to guide us in the treatment of ringworm. The disease is an eczema produced by a local cause, which cause it must be our business to remove. In doing this, however, we must not aggravate the eczema, but, on the contrary, endeavour to cure it at the same time. The essence of the treatment is the destruction or removal of the fungus, for until that is done the disease cannot get well.

The question then is, How is this best effected? If the disease is on a non-hairy part of the body, be it acute or chronic, it is quickly cured, and for the following reason:—The fungus grows in the layers of the epidermis, and mechanically or chemically can therefore be either removed or destroyed.

If, for example, strong blistering fluid be applied to a patch of ringworm of the body, a bleb is raised in which fungus can be found; in this way much, and sometimes all, is removed mechanically; or if one of the remedies known as parasitocides be well rubbed into the patch, the fungus is soon reached and destroyed. But I can assure you it is quite another matter if a hairy part such as the scalp is affected. It is true in some recent cases cure may be effected by one application just as if the part were non-hairy. But in these cases the fungus, from some unknown cause, has not been able or has not had time enough to penetrate into the follicle. These are the cases that win for quack remedies the credit of performing marvellous cures. I have no hesitation in saying that it is a really difficult



thing to cure a well established ringworm of the scalp, in which abundance of fungus is to be seen around the roots of the extracted hairs. The first question of importance to consider is whether there is any means at our disposal for the mechanical removal of the fungus when it is situated deeply in the hair-follicle. Two methods of epilation are advocated—the one by forceps, and the other by the calotte. This latter is a pitch plaster which, having been placed firmly on the head, and allowed to dry, is then forcibly torn off. Naturally this procedure is very painful, and, besides, it does more than is required, tearing out sound with diseased hairs. In addition, as it has the same disadvantages as simple epilation, which I am about to mention, I do not advise you to adopt it. Some authorities very strongly advocate epilation by forceps, affirming that ringworm of the scalp cannot be cured without it. Others think it useless. For myself I am inclined to take a position midway between these opinions, and say that in early acute patches, where only a limited number of hairs are affected and there is a prospect of extracting the root when the hairs are removed, the operation may be performed with advantage. When, on the other hand, the disease is of old-standing, and the hairs break easily on being touched, I think it is worse than valueless to epilate. Even when the mischief is localised to a small patch and is chronic I do not adopt it. It is easy to understand that if you succeed in extracting the stump, root and all, you must leave much fungus behind in the depths of the follicle, and you have not advanced your cure one iota, since it is only a question of time for the fungus to rise again to the surface. So much, then, for the mechanical removal. I now pass to the chemical mode of destruction. Chemicals such as sulphur, mercury, tar, and iodine act in two ways. First, in consequence of certain properties which they contain that are antagonistic to the growth and also to the very life of vegetable organisms, they are used as and denominated parasiticides; and, secondly, they are employed to excite more or less inflammation in the skin to which they are applied.

I cannot pretend in a brief lecture to be able to describe the numberless remedies that are grouped under the name of parasiticides; and even if I could, no useful purpose would be gained. They all seem to be of about equal value, and it matters little whether you select sulphur, mercury, tar, tar and iodine, or chrysophanic acid, and each in turn has had its supporters and its detractors. But, of course, there is one exception—viz., carbolic acid, a drug that has held its own in spite of all opposition. The value of carbolic acid as an antiseptic and a destroyer of low vegetable organisms is, I am sure, too well known through the brilliant researches and results of Professor Lister to need any

introduction from me. Here then seems to be our sheet anchor. A powerful well-recognised antiseptic would soon destroy our enemy, and some eminent authorities recommend it as one of the best of remedies. Dr. Alder Smith uses equal parts of carbolic acid and glycerin, the latter to carry the antiseptic to the bottom of the follicle. I would at once recommend this to you as the remedy to use had I not found in practice that it does not answer, and I have my own theory to account for the indifferent results. I do not think that glycerin does penetrate sufficiently deep into the follicle, and carbolic acid in strong enough proportions to be of use is a severe local irritant, to say nothing of the risk of constitutional poisoning, which occasionally occurs when this agent is persistently applied to a tender skin. We want a *parasiticide*, but we do not want an *irritant*. And this leads me to a second effect, which is another objection, in my mind, to the employment of these drugs. They excite more or less inflammation in the skin. This is what, as far as I can judge, all authorities on ringworm have hitherto insisted upon as the essential means of cure. No one has, however, stated it so boldly and argued it with so much skill as Dr. Alder Smith. He even advocated going to the length of producing artificial kerion, in order that nature may be copied, and the fungus be destroyed by a severe inflammatory process. This he does by the application of croton oil. He says, "Croton oil is the best irritant for causing this inflammatory condition."

My experience has taught me to differ entirely from Dr. Smith in the desirability of producing any inflammation; on the contrary, I think inflammation should be avoided. We should rather turn our attention to remedies that are *gentle* in their action. I am confident that many old-standing cases of ringworm are the result of *over-treatment*—that is to say, a chronic eczema is produced by the remedies, and kept up for months and years, while the fungus all the time exists undisturbed. Of late, with the view of carrying theory into practice, I have been trying some combinations of drugs, which I will now briefly describe.

Seeking for an antiseptic or parasiticide which would be less irritating than carbolic acid, and without its dangers, I have been led to try thymol and some other similar drugs. Thymol, a camphoraceous body belonging to the phenol series of aromatic compounds, is present in small quantities in oil of thyme, but is obtained chiefly from the seeds of the *Ptychotis ajowam*. It is a powerful antiseptic, being, according to Bucholz, eight to ten times as efficient as carbolic acid in preventing the development of bacteria. It is not nearly so great an irritant to the skin when applied locally, and there is no risk of constitutional poisoning. Menthol is a somewhat similar substance obtained



from Japanese oil of peppermint. That it is not far inferior to thymol as an antiseptic, I think you will see from the following experiments. From its power of relieving neuralgia when placed on the skin, and the numbness its application produces, it might be used with good results instead of thymol when there is much tenderness or irritation.

The next requirement in order to place our theory on a scientific basis is to find some vehicle which will carry the antiseptic to the part of the hair-follicle where the fungus grows, which is far beyond the reach of ordinary remedies. That chloroform is rapidly absorbed by the cutaneous surface is well known, and an experiment by Parissot confirms the view. He found that dilatation of the pupil began five minutes after rubbing into the skin of the temple a solution of half a milligramme of atropin in twenty grammes of chloroform, while an alcoholic solution of the same strength took thirty minutes to produce any effect. The question presents itself, How is the chloroform absorbed? I reply that the larger proportion is in all probability taken up by the hair-follicles and sebaceous glands. With a view to obtain some trustworthy data on this subject I have tried, imperfectly I know, to test to some extent how far a given remedy could be traced down the follicles. Accordingly I had one part of a dog's back rubbed every day for twenty-five days with the following solution:—Asphalt, half a drachm; chloroform, two drachms; olive oil, six drachms; and another part for four days with alcannin in the place of the asphalt. At the end of the time the dog was killed, and the skin that had been rubbed was removed, frozen, and cut into sections, which are now under the microscopes on the table. You will see for yourselves how far the dyes penetrated the follicles—i.e., nearly to the root of the hair,—certainly over three-fourths of the entire length of them, in the case of the asphalt. Now this I attribute to the chloroform used in the liniment. It is a solution similar to these, only with thymol or menthol, as the case may be, in the place of the colouring matter, that I have been using for the treatment of ringworm. A strength the same as above I have found to answer well in the majority of cases. The only exceptions are very young children in whom the skin is tender from previous severe treatment, or when the disease assumes one of the pustular forms. Under these conditions I would for a time lessen the quantity of both the chloroform and the thymol, or else substitute menthol for the latter. The oil is added to arrest the evaporation of the chloroform, and to prevent it from acting as an irritant. This solution I have found of great value, and I have used it both in recent and in chronic cases with success. If employed carefully in the way about to be mentioned, it quickly cleans the scalp, thereby curing the eczema, while at the same

time it destroys the fungus. It encourages the growth of new hair by stimulating the cells of the papilla; and it dissolves the fatty matter that fills up the neck of the follicle. The new hair, as it rapidly shoots up, pushes out the old diseased stumps, and raises the fungus towards the surface. In this way the disease is more quickly cured than by any other method I have seen or tried, and it has the additional advantage of not destroying the hair sacs, and consequently does not leave the unsightly bald patches which undoubtedly result from the heroic treatment. Already I have had the satisfaction of seeing several cases of fifteen or eighteen months', or even of two years' duration yield to the mild treatment in six to eight weeks, and I have not considered the cure proved till several weeks of perfect freedom from the disease have been allowed to elapse after the discontinuance of the remedy.

In conclusion, I would add a word or two of instruction as to its use. First, let the part be well washed with soap and water if it is not tender. After it is dried rub the oil in gently, taking care that the friction be not too severe or too long continued, for fear of producing a mechanical eczema. After the treatment is commenced neither soap nor water should be again used. If there is the slightest tenderness let the oil be simply painted on and not rubbed. If there are scabs present remove them gently with a comb after soaking them with the oil, which must be applied to the surface beneath. It is in the chronic squamous cases that the rubbing is well borne, but it should nevertheless be done gently and for several minutes two or three times a day, in order that the part may become thoroughly soaked with the oil. If you see at any time the slightest irritation being produced, stop the rubbing, and order the application to be merely smeared on; if it still causes irritation add for a while one-third more oil, but you will find the liniment will soon be tolerated at the proper strength. No cap should be worn in the house during the treatment, as it is essential that the head be kept cool.—*Lancet*, Feb. 12, 1881, p. 241.

---

### 63.—THE TREATMENT OF RINGWORM BY CROTON OIL.

By Dr. ROBERT LIVEING, Physician to the Department for Diseases of the Skin, Middlesex Hospital.

There is no lack of efficient remedies for common ringworm; sulphur, salts of mercury, carbolic acid, chrysophanic acid, iodine, and many more; but there is one essential condition of success in treatment on which everything, as it were, depends, and that is, that the remedy be brought into close contact with the disease; without this, all remedies are equally useless. In illustration of this point, we constantly see a patch of ringworm



on the neck cured by a single application of iodine ; but it may take years to cure a similar patch on the scalp. The disease is exactly the same in the two cases, and would be just as easily cured in the one as in the other, if only the remedy could be brought into direct contact with the parasites, as indeed readily happens in ringworm of the scalp in infants. The proverb, "You may bring a horse to the water, but you cannot make him drink," is, as it were, reversed in ringworm, for if you can only get him to the water he is bound to drink ; the difficulty is getting him there. Now, croton-oil supplies us with just such a remedy as we want, for it has the property of reaching the disease, and setting up a deep-seated follicular inflammation which destroys the trichophyton. Although this remedy has long been used in France, we are indebted to Dr. Alder Smith for thoroughly working out the subject in this country ; and more especially for pointing out clearly the object to be aimed at, namely, the artificial production of kerion over a small surface. Croton-oil liniment is very useful as an irritant, just as iodine liniment is ; but, for the special purpose of setting up a kerion, or deep-seated inflammation of the follicles, pure croton-oil is best. It is now about four years since Dr. Alder Smith called my attention to the subject ; and since that time I have adopted the croton-oil treatment in a fair number of carefully chosen cases, and always hitherto with satisfactory results. I would add, however, that it is quite possible to produce a slough, and consequently a permanent bald patch, by the too free use of croton-oil, just as sometimes happens accidentally from the application of other strong remedies in more common use ; and further, if croton-oil be used without discrimination, or a due regard to the age of the patient and the extent of the surface involved, it is sure to be brought into unmerited disrepute, the fault being, not in the croton-oil, but in the person who recommended it in unsuitable cases.

I can best enforce this by an example, thus : a typical case for the use of croton-oil, and one which frequently occurs in practice, is that of a boy aged from twelve to fourteen years (when time becomes valuable), who is very anxious to return to school, but is prevented by one or two spots of intractable ringworm. In this case, and in others like it, croton-oil is invaluable, and the little extra trouble it gives is readily borne for the sake of saving perhaps a year at school.

The best way of using the croton-oil is as follows. A single small spot, not larger than a shilling, should be treated first ; the croton-oil should be carefully but thoroughly painted on with a small stiff camel's hair brush ; a few hours afterwards, a warm poultice should be applied and kept on all night. The croton-oil must usually be applied again the next day, followed

as before by constant poulticing; a third and sometimes a fourth application may be necessary to set up the required amount of inflammation; the skin should be swollen, boggy, and discharging freely, like a natural kerion; the production of this is much favoured by warm fomentations and poultices. As soon as this condition is produced, no more croton-oil should be applied; frequent warm fomentation is all that is then necessary; and when, in the course of a day or two, the inflammation has a little subsided, the stumpy hairs should be extracted entire; this is easily done, as they are for the most part loose in their follicles, and can then be removed without pain. If a good kerion have been established, the *cure is complete*; if only an imperfect one have been formed the process may, after some time, have to be repeated over part of the same area. It is astonishing how quickly the new hair generally grows over the bald patch when the cure is complete. It is true that natural kerion is sometimes, though rarely, followed by a permanent bald spot, and it is conceivable that such an accident might follow from the use of croton-oil, without any error in the choice of the case or in the application of the remedy; I would add, however, that I have never yet met with such a result; if it occurred at all frequently, we perhaps might turn croton-oil to account in the removal of superfluous hair.

Those who wish to use croton-oil with safety and success should adopt the following rules, which err, perhaps, a little on the side of caution:—1. Not to use it for children under ten years of age; 2. Never to apply it at any time to a surface larger than a florin; 3. To use it only in chronic cases that will not yield to ordinary treatment; 4. To use it only with the consent of the patient's friends; the nature of the treatment, and the effect of the croton-oil on the skin, being first fully explained. If the last rule be not carried out, parents are apt to think that their children are being over-treated.—*Brit. Med. Jour.*, Feb. 12, 1881, p. 227.

#### 64.—ON ECZEMA DIGITORUM AND ITS TREATMENT.

By Dr. J. MAGEE FINNY, Physician to and Lecturer on Clinical Medicine and Dermatology, City of Dublin Hospital.

In general as in hospital practice, hardly a day passes without the physician being called upon to treat cases of eczema.

Of the protean varieties of eczema it is not my intention to speak. I desire to address myself to the disease as it presents itself on the fingers and in some other special localities, because these varieties are passed over in a few, generally short, sentences in the treatises on skin disease.

The most prominent symptom of eczema of the fingers is



pruritus, and this itching often first calls attention to the eruption. It is present at every stage; at first it is more of a tingling sensation, relieved by firm pressure, but in the stage of infiltration and squamation it cannot be allayed by less than the liberal use of the nails. This pruritus is common in every variety of eczema, and so severe is it at times, when the disease is situated in the scrotum or in the eyebrows, I have known scratching to be carried to such a degree as to remove every hair from the affected part.

Eczema digitorum is very chronic in its course, and, with seeming improvements, it recurs again and again with increased severity. Hebra thus writes of it: "Of all varieties of eczema the most obstinate and difficult to cure is that which attacks the fingers, and here it is also peculiarly liable to recur."

Of the many other varieties of eczema and dermatitis engaging the hand and fingers, which are caused by mechanical irritants attendant on several trades and occupations, I wish to refer to only one—a very common one in winter and spring, which occurs in nurses, and those who are engaged much in washing. It is extremely painful, rendering the hands almost useless, and yet it is very readily cured. I mean the inflammation attacking the distal phalanges close to the nails. Deep and wide fissures ensue, so that the fingers are rendered useless for needlework, or indeed for any other work, and they are so painful that often rest at night is broken and disturbed. Several treatments have been suggested, but there is nothing which I have found to come up to frequently coating the fissures, and the ends of the fingers generally, with a solution of gutta-percha dissolved in chloroform. Painful at the moment of application, it soon gives the greatest relief, and has the advantage of not requiring the patient to give up her work, even for a time, and of not heating the finger, as india-rubber finger-stalls are likely to do. I have employed collodion flexile in similar cases, but it has not answered at all as well as the chloroform solution.

Excluding mechanical and chemical irritants and venous obstruction as causes of eczema, dyspepsia, worry, gout, and scrofula are recognised predisponents. In looking through the notes of my cases of *localised* eczema digitorum, I find the majority occurred in persons over thirty years of age, and that no case in children presented itself to my notice. Those under thirty generally conformed to the type of scrofula, while many of those over thirty exhibited characters of gout. At the time of the rash it was noticeable that in neither class was there any pronounced type of the respective diathesis present, as if the *materies morbi* were not sufficient to cause either a gouty paroxysm or pulmonary congestion, but expended its force on

the skin. However that may have been, it was a great help to the treatment to recognise either scrofula or gout as factors in the case, and it is a point, I consider, which should not be overlooked in the management of such cases. There is another class of patients in which I have noticed eczema to be of frequent occurrence, which does not come exactly under either of the above heads. It is that of overworked nervous persons with much anxiety of mind, such as governesses or mothers of large families. In these cases the benefit which has followed upon the use of pure phosphorus was at once gratifying and remarkable.

There are very many points in common which render the diagnosis difficult, and particularly so when scabies attacks adults of strict personal cleanliness, and who are in the habit of frequently washing their hands. In such patients one never meets with the pronounced gross features of scabies of the "great unwashed." The situation being on the fingers and often the interdigital spaces, the intolerable itching augmented by heat and the existence of vesicles, make the resemblance very strong. In distinguishing between them, it is well to recognise the greater frequency of scabies at all ages, and especially in the young, in every station of life, as compared with eczema digitorum. Vesicles are present in both eczema and scabies, but in eczema they are small, uniform in size, and clustered—involving a large part of the finger; the skin, moreover, becomes infiltrated and thickened, with various cracks over the joints, and the seat of the disease is accurately defined; while in scabies vesicles occur only here and there on several fingers, wherever the young acari lie, and beside the burrows of the females, and hence they are few in number and discrete; again, they are found on the palm and wrist, at the head of the ulna, as well as between the fingers. Moreover in scabies, in certain irritable skins, a number of secondary eruptions—erythema, pustules, bullæ, and scabs—may be detected about the hand, on the wrist, and palm, and extending up the arm. The very irritation differs, for the itching of scabies is stated to be less unpleasant than that of eczema, and to be free from the smarting and tingling of the latter.

Should the eczema digitorum be but part of general eczema, with itching in different parts of the body, it will not follow the course of scabies, for the latter shows itself wherever the insect is carried by the finger-nails, or where the clothes by their tightness foster the acarus—thus at the waist and under the breasts in women, on the shoulders and on the dorsum of the penis in men.

A matter of care in every case, the diagnosis becomes a



matter of considerable difficulty when an original scabies has been so persistently and energetically treated by inunctions of sulphur that a true irritative eczema is superinduced, and not being recognised, but looked upon as part of the original complaint, is still further aggravated by increased activity of treatment.

Under such circumstances—and they are by no means as rare as those who see little of skin diseases might imagine—an accurate diagnosis can be arrived at only when soothing treatment has been employed, and the sulphur totally suspended for a few days. The scabies may then be found cured, and the eczema, the result of too strong and too vigorous medication, will be sufficiently defined to be recognised. Should doubt still exist, the discovery of the *acarus* will decide the question.

In addition to scabies, the fingers may be the seat of other cutaneous affections—such as lichen, psoriasis, *tinea circinata*, impetigo, dermatitis *exfoliativa*, pityriasis rubra, and the syphilodermata. It is, however, hardly necessary to delay upon the resemblances which, according to some authorities, exist between them and eczema, as sufficient has been said to point out the distinguishing features of eczema, so that, with ordinary care, a diagnosis may readily be made.

My practice in treating a patient with general or local eczema is (1) at once to relieve the portal circulation by mercurial and saline cathartics; to correct dyspeptic symptoms by acids, or (as may be indicated) alkalies, in some bitter vegetable infusion; to call the kidneys into functional activity by diuretics; to restore failing nerve energy by phosphorus; and to meet the gouty tendency by colchicum and alkalies, or the scrofulous by cod-liver oil and some preparation of iron. The acknowledged efficacy of certain natural waters—such as Harrogate, Strathpeffer, Aix-la-Chapelle, &c.—in chronic eczema is doubtless due to their action upon the liver and the kidneys.

2. I pay particular attention to diet—limiting the albuminous and saccharine food, and forbidding the use of fermented liquors, and enforcing fresh fish and vegetable diet. Neglect of these and similar points often retard recovery in a very notable way.

3. Another subject to which I direct the patient's attention is that of *washing*. Usually I find that eczematous parts are washed much too frequently. It is an everyday experience (especially among private patients) to hear a mother say, that no matter how often she wash it she cannot keep her child's face clean of the scabs and crusts of eczema; while in truth, by her over-zeal, she is frustrating the curative process of nature, which, until disturbed, was proceeding beneath those crusts. As a rule, it is best not to wash an eczema very often—certainly

not more than once a day, sometimes not once a week—and then only for the purpose of removing the exfoliated epidermic scales and any ointments or applications which might otherwise irritate the skin. In such cases I do not recommend soaps, instead I advise oatmeal-tea, or rain or soft water, to each pint of which one tablespoonful of glycerine has been added and two tablespoonfuls of finely-powdered starch.

4. Local treatment is, doubtless, the most important in eczema. In the acute forms it should consist of some bland soothing fluid, or, if there be much exudation, some absorbent and slightly astringent powder. When the disease is more chronic, and all heat and redness has given place to induration and scales, the latter should be removed by inunctions and poultices, and the former by stimulating applications. It is in the judicious employment of those remedies, and in the steady perseverance in their use when once decided upon, that such cases can be brought to a successful termination.

Reverting to the subject—that of local eczema of the fingers—the treatment I have found to answer best is—

(a). In the early or acute stage, while there is but little thickening, to apply on strips of old linen wrapped round each finger, and covered with a glove, either ung. hydrarg. ammoniat., of the strength of  $\text{3 i ad } \text{3 i.}$ , or equal parts of vaselin and the oleate of zinc (introduced by Mr. Crocker). If there be much tingling or itching I add to each ounce  $\text{℥ x.}$  of chloroform, or  $\text{℥ xij.}$  of acid. hydrocyan. dil. The ointment should be allowed to remain undisturbed for about twenty-four hours. It should then be well washed off in oatmeal-tea, and fresh ointment on fresh linen reapplied.

(b) When induration exists, stronger and more stimulating ointments may be employed, or, what will answer better at first, macerating the skin by a water poultice, or by simply covering the finger with an india-rubber finger stall. It should be closely fitting, but should not interfere with the return of the venous blood. If the patients can wear these rubber finger-gloves, very rapid improvement will be seen to follow; the skin becomes pliable, soft, and thin, the scales disappear, and the rhagades close up, and the oleate of zinc ointment, or one made of bismuthi nitras ( $\text{3 i. ad } \text{3 i.}$ ), will speedily complete the cure.

Unfortunately, it is not every patient who will be persuaded to persist in the rubber treatment; their general objection is that the finger becomes so hot, and throbs so, that they either entirely desist from its use, or employ it so irregularly as to nullify all good effects. In such cases I have found Hebra's diachylon ointment, as modified by Kaposi, of the greatest service. Hebra was in the habit of treating indurated patches



by rubbing in liq. potassæ till the thickened epidermis was dissolved, and the surface was covered with bleeding points; but I confess that, in my experience, Irish patients will not submit to such treatment, for what reason I know not (except it be that their nervous system lies nearest the skin!), and that they who would, without a protest, submit to strong internal remedies producing considerable pain, will wince under, and protest against remedies which, when applied to the skin, cause slight pain and uneasiness.

For the itching, which is sometimes very severe in the stage of infiltration, there is no remedy so efficacious as tar, and it may be employed either in the form of an alcoholic solution in combination with soap (saponis mol., ol. picis vel cadini, alcohol āā, partes æquales), or what I find answers better in an ointment such as this:—℞ Cremonis frigid., ʒi.; ung. picis, ʒ iij.—3 vi.; zinci oxidi, ʒ i.; hydrarg. ammoniat., ʒ j.; vaselini, ad ʒ ij., Ft. ung.

“Whatever course be adopted in treating chronic eczema, constancy and perseverance are of the most importance. He who is always changing his plan of treatment is sure not to attain his object so quickly as one who steadily and patiently applies whatever remedy seems best suited to the case.” (Hebra).—*Dublin Journal of Medical Science*, Oct. 1880, p. 289.

#### 65.—ON SACCHARINE URINE IN CHRONIC ECZEMA.

By Dr. ROBERT LIVEING, F.R.C.P., Middlesex Hospital.

During several years past I have, as a matter of routine practice, tested the urine of all cases of obstinate eczema that have come under my care for sugar and albumen, and I find the presence of one or both very common. It is, however, the frequent presence of the former in the urine of those suffering from severe obstinate eczema, to which I desire to call attention, and especially with reference to treatment.

One may say broadly that there are two principal and quite distinct groups of cases in which saccharine urine occurs—(1) we have diabetes in its graver forms, depending on profound nervous lesion; and (2) glycosuria, depending on defective assimilative processes, in which certain functions of the liver are especially at fault. It is only to the latter group that I wish to refer. The glycosuria which is met with in the latter half of life is neither uncommon nor always serious; it is, as I have said, apt to be associated with very irritable and obstinate eczema, and in women the saccharine urine acts in addition as a *local* irritant, and makes the eczema about the pudendum almost intolerable; indeed, excessive and intractable irritation in this region in middle-aged women is very commonly asso-

ciated with sugar in the urine, and is often incurable as long as much sugar remains.

Now I come to the point to which I wish especially to draw attention, and that is that the eczema and the sugar in the above-named class of cases are mainly due to *over-feeding*. I use the term in its broadest sense, and include quality as well as quantity of food. I frequently meet with cases of intractable eczema pudendi in women past middle life, of sedentary habits, and eating three large meat meals a day, and trying by all means in their power to stimulate their appetite, under the erroneous impression that they are "keeping up their strength." Now, in these and similar cases, medicine and local treatment are almost equally useless, unless there is, at the same time, a thorough reform in the diet. The first point is to deprive the patients of sugar as an article of food, except just enough to make light puddings palatable. The reason for this is that much of the sugar passes the liver unchanged, and is therefore worse than useless as a food. The next point is greatly to reduce the animal food, especially mutton and beef, and to substitute for it simple clear soup, and poultry or fish in moderate quantity once a day. Lastly, the chief part of the daily diet should be made up of light farinaceous and milk food, such as bread, rice, and macaroni. This is, I know, contrary to the view often entertained, that saccharine urine should be treated by an animal diet, and that starch should be as much as possible excluded. Now, whatever good may result from such a diet in some cases, I am quite sure that it does not answer in those to which I refer; on the contrary, exactly the reverse holds, and the old routine practice, except so far as sugar is excluded, is quite wrong. I have seen the sugar disappear from the urine and the eczema depart under a change of diet such as I have above recommended. The truth is that many people of sixty, when the tissue changes are slow, eat as much or more than they did at twenty, when all the processes of change are at the height of their activity; what wonder then that unnatural work is thrown upon the skin, kidneys, and other excreting organs of the body. There is some substantial truth in the saying that small eaters live the longest.—*Lancet*, March 12, 1881, p. 411.



## MIDWIFERY, AND THE DISEASES OF WOMEN AND CHILDREN.

---

### 66.—ON A CASE OF RUPTURE OF THE UTERUS—GASTROTOMY AND RECOVERY.

By Dr. E. MILES WILLETT, of Memphis, Tenn.

[The following interesting case is related by Dr. Willett. The patient, Mrs. Blanque, had had previous very difficult labours, but this time the uterus had evidently ruptured.]

Dr. Willett and Dr. Frayser found the patient somewhat restless and disturbed in mind. She had vomited freely and was throwing up bile when we entered the room, and had not had a labour pain for half an hour. The blood in the vagina, the recession of the head, the absence of labour pains, and the irregular surface of the abdomen, through the walls of which could be distinctly felt an elbow, made the diagnosis of rupture of the uterus absolutely certain, although the attendants did not think that she had suffered very much, and could not remember any particularly agonising pain. After consultation we decided to perform gastrotomy. The sudden announcement of the exceedingly dangerous condition of the patient, and the explanation of the proposed formidable operation, produced such an effect on the feelings of her husband as can only be imagined.

That they should have withheld their consent for a while, to the performance of an operation which offered so little prospect of success, is not surprising.

In the midst of this delay, the patient herself requested us to do whatever we deemed best. At twelve o'clock, therefore, two hours and a half after the rupture occurred, I commenced the operation, assisted by Drs. Frayser and Grant, by making an incision in the median line, through the skin and cellular tissue, from below the umbilicus to within an inch of the pelvis; but as this would not give sufficient room, I extended it upward and to the left of the umbilicus. I then opened the peritoneum, and with a probe-pointed bistoury, guided by my finger as a director, completed the incision.

We found that the child and placenta had been expelled by the uterus into the cavity of the abdomen, the child's head rested on the brim of the pelvis, and the uterus had contracted sufficiently to prevent exhausting hemorrhage.

After removing the child and placenta, we carefully sponged out the blood and amniotic fluid, drew the edges of the wound together with interrupted sutures which were passed *through the peritoneum*, applied adhesive plaster, adjusted the binder, and ordered cold applications.

During this time the patient was fully under the influence of chloroform. The pulse was ninety-six, and sufficiently full before the operation; one hour afterward it increased to one hundred and ten. During the night she took six drachms of elixir of opium.

[After various dangers the symptoms gave way, and]

April 3. Wound entirely united; pulse one hundred and eight; bowels in good condition; vaginal discharge considerable and very offensive. Ordered diluted chlorinated soda to be alternated with the permanganate of potash as an injection.

From this date the vaginal discharge gradually diminished and became less offensive; and under the influence of iron, wine and nutritious diet, the patient in a few weeks regained her former health, strength, and beauty. In due course of time the menstrual function was established, and since then has been regularly performed in a physiological manner.

Nearly fifteen years have elapsed since this event; the lady is still a resident of Memphis, and has continued to enjoy excellent health. Her husband died two or three years after the accident. She remained a widow four or five years and then married again. She continues to menstruate regularly, but conception has not occurred since, although married to quite a vigorous person, the father of a number of children.

Rupture of the uterus in the body or fundus, is undoubtedly one of the most startling accidents of the lying-in chamber. Fortunately it is of rare occurrence, and yet it may take place when we least expect it, without warning, without any apparent predisposing cause, without any directly exciting agency. It is well, therefore, to have clearly defined views with regard to the best method of treatment in this great emergency.

In Playfair's System of Midwifery, one of the latest works that I have read on this subject, I find the following table of comparative results of various methods of treatment after rupture of the uterus:

Treatment.	No. Cases.	Deaths.	Recoveries.	Per cent. of Recoveries.
Expectation . . . . .	144	142	2	1.45
Extraction per vias naturales	382	310	72	19.
Gastrotomy . . . . .	38	12	26	68.4

“Of course this table will not justify the conclusion that sixty-eight per cent. of the cases of ruptured uterus in which gastrotomy is performed will recover; but it may fairly be taken



as proving that the chances of recovery are at least three or four times as great as when the more usual practice is adopted.

It is perhaps needless to say that the operation must be performed with the same minute care that has raised ovariotomy to its present pitch of perfection, and that especial attention should be paid to the sponging out of the peritoneum and the removal of foreign matters.

To recapitulate: I think what has been said justifies the following rules of treatment after rupture:

1. If the head or presenting part be above the brim, and the foetus still in utero—forceps, turning, or cephalotripsy, according to circumstances.

2. If the head be in the pelvic cavity—forceps or cephalotripsy.

3. If the foetus have wholly or in great part escaped into the abdominal cavity—gastrotomy.”—*Mississippi Valley Medical Monthly*, Jan. 1881, p. 6. ———

#### 67.—ON THE EFFECTS OF THE INDUCED CURRENT UPON PARTURITION.

By WALTER J. KILNER, Esq., B.A. M.B. Cantab., Electrician to St. Thomas's Hospital.

It is not an uncommon occurrence to meet with cases of confinements in which it seems likely that the child will be born in a few minutes, and yet there is a delay owing to the pains being very short, feeble, and at long intervals, although the mother shows no sign of fatigue. In these instances ergot might be of use, but it is not administered because it is expected that before it has time to act the labour would be over. Having met with three similar cases almost consecutively, I came to the conclusion that electricity might be of use, and I think that the results of my observations may interest some of the profession, as I am unable to find any mention of the induced current being used in parturition, except for the purpose of controlling post-partum hemorrhage.

My first experiments were especially directed to discover whether the pregnant uterus, like the voluntary muscles, possesses *motor points*. After many trials, the conclusion I arrived at is that motor points exist, and can be easily found by bisecting the line drawn from the umbilicus to the middle of Poupart's ligament. This point is approximate, being only applicable before the uterus has descended, to allow the head of the child to enter the pelvis, and the spot varies slightly in each case according to the position of the uterus. When we talk of motor points, we must recollect that the uterine muscular fibres are of the unstriped variety, and that they do not respond to galvanic stimulation so quickly as the striped muscles.

When the poles of the coil are placed upon the spots just indicated the first thing observed is the immediate contraction of the abdominal muscles, the intensity of which depends upon the strength of the current. Occasionally, at the instant of contact uterine contractions commence, but more often a lapse of about a quarter of a minute is required, and not unfrequently they are delayed for two or three minutes. But still the current is taking effect, as the intermittent use, for instance, half a minute on and the same off, rarely fails to induce contractions in a few minutes; these increasing gradually in severity and duration while the intermissions become less and less. Latterly, however, I have applied the current only during the contraction, to obtain the benefit of the relief of pain. The following is a well-marked instance of galvanism producing uterine action:—

*Case 1.*—Mrs. A—, aged twenty-nine. Third confinement, Oct. 1879. At 9.30 p.m. the os was very nearly dilated. The membranes were thick, and the child's head was in the first position. The pains were weak, and at intervals of rather more than ten minutes. The membranes were ruptured, and the terminals of the induction coil were placed one upon either side upon the motor points, and the current was only turned on during the pains. After she had three the pains became almost incessant, and they never ceased until the current was stopped. Although the contractions were violent she did not feel them so acutely as before the coil was applied. The child was soon born, and under the influence of the current the placenta was expelled forcibly outside the vulva. She had an excellent getting up, having very few after-pains.

The above case illustrates another frequent occurrence—namely, that *the pains do not cease until the current be discontinued*, but however more frequently, although the pains become very prolonged, yet they stop of their own accord. If it be wished merely to prolong any one uterine contraction, the current is best applied near the termination of the pain, when it will commence *de novo*. In one instance, which will be directly related in full, the induced current did not produce any uterine contractions, although the abdominal muscles did so violently.

*Case 2.*—Mrs. B—, aged thirty. First confinement, June 1879. Labour pains commenced yesterday soon after midnight. This afternoon at four o'clock the os was about the size of a crown piece, and very rigid. I administered an injection of hot water for six or seven minutes, during which time the pains were severe, and in ten minutes from the commencement of the injection the os was fully dilated. Subsequently the head did not advance further than the lower part of the pelvis, and remained stationary although the pains were strong for three or



four hours. About this time the pulse rose to 120 per minute in the intervals, and higher during the pains. I was then allowed to use the coil, and applied a gentle current to the abdomen, avoiding the motor points during the pains. The contractions of the uterus, which were previously every three or four minutes, increased in number to one about every thirty seconds. The most singular effect, however, was that the pulse rate during the interruption after the first pain, during which the current was used, declined to eighty per minute, and for twenty minutes the pulse did not rise above that number. Besides *during* the second pain the pulse fell to sixty beats per minute; subsequently the pulse did not vary either during or between the pains. After twenty minutes it rose to a hundred, and as I came to the conclusion that mechanical interference was necessary, I applied the forceps and delivered her. Another striking effect was that before the current was used the woman was very fatigued and worn out, and every pain tried her much, but immediately upon the application of the galvanism the careworn expression vanished, and the subsequent pains were not so trying, although she still felt them, but not so severely. Mother and child went on well.

*Case 3.*—Mrs. C.—, third confinement, July 1879. Soon after midnight, when I saw her for the first time, the os was half dilated. Cranial presentation, first position. The pains had commenced at about 3 o'clock on the previous afternoon, and there was about five minutes interval between them. At 4 a.m. I was called again, the os was nearly dilated. The pains had become very slight, and soon disappeared entirely. Pulse 140. She looked worn out, and complained of faintness, which was the reason I was called. As there was no obstruction I gave a dose of ergot, and applied the coil. Neither had the slightest effect of producing uterine contractions, although the abdominal muscles responded freely. In less than half a minute the pulse rate was lowered to 108, and all the sense of fatigue disappeared. As all the bad symptoms were arrested, I gave her a sedative. Eighteen hours afterwards the pains commenced again spontaneously, and the child was born at 10.40. The placenta was, as in previous labours, entirely adherent. She had a good getting up.

The first consideration we will take will be that of the sensation of pain. In Case 1 this was almost entirely removed by the current, while in Case 2 it was lessened, and in other instances not quoted it continued more or less severe. As we find that the induced current has such a variable effect upon the pain during labour, we think it is impossible to ascribe the whole of it to the sensation caused by uterine contraction, and we think there is another factor usually present which partakes

of the character of neuralgia. This conclusion is founded partly upon the fact that the pain is not in proportion to the intensity of the uterine contractions even during the same labour, and partly that when the pain is disproportionately severe, there usually accompanies it other more or less distressing symptoms, such as nausea and vomiting, or the peculiar sinking feeling at the pit of the stomach; and besides, we find that pain is excessive more commonly in weakly women whom we should expect to suffer from neuralgia, rather than in those of a phlegmatic temperament. Of course allowance has to be made for the circumstance that one woman will bear with fortitude the pain which will demoralise another, also for the mechanical difficulties attending the dilatation of the maternal soft parts, and for the relative sizes of the child and mother. If this division be made, it is not more difficult to understand that the induced current will remove the neuralgia attending labour than that it will frequently do the same in other cases, while in no instance in which, when present, was the sinking feeling entirely removed, and I have not as yet met with a single instance of vomiting after the current was applied, although in several it was previously incessant.

As regards the influence of the current upon the pain produced by the second factor—namely, the uterine contraction—it may be stated, in short, that it is slightly diminished. One of the best methods of testing this question is by observing that when the contractions are intensified and prolonged under the influence of faradism, the woman does not complain of their being more painful; and in one instance I was even begged to discontinue the current because “the pains were no good,” although the pressure upon the child, as perceived by vaginal examination, was much more considerable than when the current was omitted.

Very nearly allied to the subject of pain is the constitutional effect of galvanism upon the woman. In Cases 2 and 3 the current was not used until the patient was prostrated, and her pulse rapid. In the former case not only did the fatigue disappear, and the pulse become slower, but the pains were absolutely intensified; while in the latter the prostration was removed, but no uterine contractions could be produced. These are the only two instances I have met with, because the patients in the other confinements allowed the coil to be applied before prostration became manifest.

Faradism has a very striking effect upon the pulse rate during parturition, having a tendency to equalise it. If the rate be normal, the pulse is slightly quickened both during its use and also during the intermissions. But should the rate be much too rapid, it is lowered, and usually approaches the same



number per minute as that to which in the former instance it rises. Taking an average, the number of the pulse beats per minute under the influence of the current is about 90; and this does not alter, as a rule, during or between the pains. It may be mentioned here that the after pains do not seem to be in any way affected when the current has been used in labour, nor has anything gone wrong in any one case subsequently.

From what has already been stated, it is comparatively easy to say beforehand what patients are the most likely ones to be affected favourably by the induced current—viz., (1) those of a nervous temperament, who are easily excited, and who usually feel pain acutely; (2) those who have sympathetic disturbances, such as vomiting and hiccough; (3) those who require stimulation.

In my opinion, the best way of applying the current is to place the electrodes (each being about three inches in diameter) upon the abdomen over the motor points, these being retained in their proper places by the binder. It is very easy to make flat electrodes of spongio-piline by running through the waterproof covering several wires in different directions. Large electrodes are preferable to small ones, because the same current spread over a large surface is not felt so acutely as when it is concentrated into a small space. For the relief of pain a very mild current is only required, but for the production of uterine contractions a variable strength is necessary.

P.S.—Since writing the above I have used the induced current in forty-one cases. In all there was a diminution of pain, which was well marked in most. With one exception the uterine contractions were increased. In the exceptional case ergot likewise failed, and forceps were necessary on account of uterine inertia. Two women had sickness; one of whom suffered from bronchitis, and retching was induced by her cough. In the rest vomiting and nausea, when present, were almost instantly relieved. In every case the mother and child did well. The after-pains were in no way altered. In one case the current was applied for the relief of false pains ten days previous to her confinement, but was ineffectual.—*Lancet*, Jan. 1, 1881, p. 11.

## 68.—THE LONG AND SHORT FORCEPS IN MIDWIFERY.

BEING A ROUGH ANALYSIS OF 200 FORCEPS DELIVERIES.

By Dr. JAMES MORE, Rothwell, Northamptonshire.

Educated in what Dr. Barnes calls the “procrastinating school”—i.e., the expectant or do-nothing school—I for many years trusted, with a childlike confidence, in the unbounded resources of Mother Nature, waiting patiently and in hope, and

thinking nothing of keeping my suffering patients ten, twenty, or even thirty hours in sore labour. But such expectancy, I believe, is becoming a thing of the past, and the art of midwifery is advancing like everything else. Our best and most advanced teachers now tell us that the process of parturition, though physiological in its mechanism, is yet often pathological in its results. Every one in midwifery practice, of course, meets with cases which, from beginning to end, are absolutely natural in all their stages. It is, however, wonderful, and indeed startling, to think that in this nineteenth century such fortunate labours are not far removed from being the exception and not the rule.

A very large proportion of midwifery cases demand the help of the intelligent accoucheur. Since the days of Smellie down to our own illustrious Barnes, the long double-curved forceps stands prominently forward, as the instrument of all others, scientifically fitted to meet the requirements of the obstetric surgeon.

To compare the long and the short forceps together is to compare things completely incongruous; the one being an instrument almost perfect in its power of scientific adaptation; the other being essentially useless and having no *raison d'être* in the obstetric bag. And yet, the short single-curved forceps is, I am afraid, the *only* instrument seen in the hands of many country doctors. Indeed, according to Dr. Barnes, the long instrument was perhaps better understood one hundred years ago than it is in the present day. How this retrograde movement in practice commenced it is difficult to understand, unless it be the rage for invention: every teacher of midwifery feeling obliged to startle the world, not only with some modification of that already almost perfect instrument, the long forceps, but at the same time to bring forth an *anachronism* in the shape of a short forceps.

For many years I used Sir James Simpson's short forceps, nor can I well forgive myself for using it for so long, nor him for the invention. A painful experience obliges me to confess that in not a few cases the *perforator* had to finish what this most useless instrument had begun. In looking over my register I find it credits me with seven craniotomy cases, most of which I am afraid were due to simple inefficiency and want of power in the instruments used. It is now some years since I discarded this toy and took to the long double-curved forceps, and I am glad to say that, with one exception (a case of vaginal cystocele), I have not had a single case of craniotomy. Of course, I do not mean that I ever attempted the high operation with the short forceps, but these were mostly cases where the head was within reach, yet from want of power, or rather, inherent weak-



ness, it failed in accomplishing that which I have since found to be easy and safe, with the larger and more powerful instrument.

Again, though so small and handy-looking, the short instrument is really not of so easy application, for ordinary cases, as the long double-curved forceps. In some of my cases, notably in two cases of convulsions, I had the greatest difficulty in keeping the patients quiet *and near enough the edge* of the bed, and that though they were under the influence of chloroform. The pelvic curve in the long instrument makes its application, even in the middle of the bed, a matter of little or no difficulty. This pelvic curve also does away with the necessity of paying such strict attention to the position of the head, for the blades, of course, must be placed in one or other of the oblique diameters, and nearly parallel with the sides of the pelvis. It is in this position the blades have most room, and they naturally and easily glide into these spaces in the ordinary presentations.

This rule, or rather fact, has been my guide in most, if not all, of my 200 cases. It follows from this lateral introduction that the grasp of the blades will always be oblique in reference to the head. Thus I almost invariably found that when the head was in the *first position* the upper and posterior blade grasped the right forehead, the lower and anterior blade grasped the left occiput. When in the *second position* the upper and anterior blade grasped the right occiput, the lower and posterior blade grasped the left forehead. In other words, the *upper* blade grasped the forehead in *first* positions, and the occiput in the *second* positions; just as the *lower* blade grasped the occiput in *first* positions, and the forehead in *second* positions. This may look like a Chinese puzzle, and of no practical value, but I think it justifies the rule of always introducing the long forceps in reference *only* to the sides of the pelvis. The oblique grasp of the head is the true and legitimate one, and is in strict accordance with the mechanism which guides the head through the pelvic canal.

A purely lateral grasp of the head is still taught and practised by some, but I need not remind you that the oblique grasp of head was long ago pointed out by Smellie, insisted on by Simpson, and is still taught by Barnes, Playfair and other leaders in the art. An apparent exception to this rule is of course found in cases where the head is quite down on the perineum, and in the ordinary position of face looking directly backwards to the sacrum. Here the grasp, as a rule, is more on the lateral aspects of the head, one blade being before one ear, the other behind the opposite one.

Like others, I have applied the blades transversely—*i.e.*, over the ears of the child—in order to rotate in cases of occipito-

posterior position where, from some cause, natural rotation into occipito-anterior position had been arrested. This I now believe to be seldom necessary, as the pelvic curve in Simpson's long forceps (the instrument I have chiefly used) is so slight, that *traction alone with the oblique grasp* will bring the head into its proper position.

The degree or amount of force that is justifiable in using midwifery forceps is still, I am afraid, a matter of opinion. Dr. Duke, of the Rotunda Hospital, Dublin, mentions an instance, where in a long-forceps operation an extra accoucheur had to be put on, who by grasping the first round the waist helped in completing the delivery, "with no detriment to mother or child." To obviate the necessity for such an obstetric team, Dr. Duke has introduced a pair of tractors, which no doubt must greatly increase the tractile power of the forceps. But it is questionable if such increased tractile power is even necessary. With a Barnes's or a Simpson's long double-curved instrument, as much power can be exercised by a skilful accoucheur as is ever necessary or justifiable. With the mare and the cow, the amount of tractile force brought safely to bear on the poor parturient is something marvellous. Strong ropes attached to the foetus, and dragged at by relays of men, or even by a horse, is a tug of war within the experience of country farriers.

But though boundary lines (even geographical) are always difficult to define, there must, in the parturient woman, be a scientific boundary line somewhere; and I think the experience of most practical accoucheurs will bear me out in limiting the justifiable tractile power in delivery to one pair of hands and a good, scientifically made and applied, long double-curved forceps. Nor does this exactly define what degree of force one may use. In many of these forceps cases of mine, I used all the force or strength I had. One thing is certain, the more powerful the instrument the less force is apparently necessary; at all events, it is used with greater advantage to the patient, and with less muscular fatigue to the operator. With the long forceps we come to the bedside with potential power enough to do any operation which is justifiable in forceps delivery. In the short forceps we lack that reserve of power; and as weakness in an instrument may mean the exertion of undue force on the part of the operator, the child is either delivered at the expense of the maternal passages, or, what is more probable, it is left to the tender mercies of the perforator. In the words of Barnes, "A weak instrument is, by the mere fact of its weakness, restricted to a very limited class of cases. In the second place, if the instrument is weak, it calls for more muscular force on the part of the operator. The faculty of accurate graduation of power depends upon having a reserve of power. Violence is the result of struggling feebleness, not of conscious power."



*My experience of ergot* as an aid to delivery, or rather as a substitute for forceps, is decidedly unfavourable. To be of use it must be given in large or repeated doses, and when it does act, it often, as is well known, kills the child, not only by the uterine tetany it causes, but as often by constricting the foetal arterioles. I saw a case lately where it was given by an assistant of mine. Everything was favourable to delivery, but the pains were weak and irregular--the third dose brought on intense uterine contraction. All the weak irregular pains seemed merged into one prolonged spasm, the uterus remaining hard as a board for ten or fifteen minutes before delivery took place. The child was dead from placental pressure, squeezed to death in short, by the force of the uterine tetany.—*Obstetrical Journal*, Dec. 1880, p. 723.

---

#### 69.—ON THE TREATMENT OF PRURITUS VULVÆ.

By Dr. ARTHUR WILTSHIRE, Joint-Lecturer on Obstetric Medicine at St. Mary's Hospital.

While in many cases vulvar itching readily yields to treatment, in others it proves obstinate and intractable, taxing our therapeutical resources to the utmost. Here, as in other affections, a clear diagnosis as regards causation is generally essential for successful treatment. It is obvious that a symptom owning so many and varied causes cannot be appropriately treated in a routine manner; search must be made into the origin of each case, and treatment based upon the knowledge thus acquired.

Attention to cleanliness will often do much to allay irritation, and should always be enjoined. Demulcent washes are preferable to soap, unless carbolic or coal-tar soap be used, and usually even these are inadmissible. Almond-meal, strong bran-water, decoction of rice, marsh-mallow, slippery elm, or fine oatmeal, are suitable, especially the first, which, if pure, yields during use a marked odour of hydro-cyanic acid, and appears to sooth materially. The prohibition of friction may be required, some afflicted sufferers finding transient relief only during scratching, which may be indulged in to an extent involving serious consequences. Relief may be so frequently sought in this manner, as to exclude sufferers from society, and even from the family circle; while other regrettable results, moral as well as physical, may ensue.

When pruritus is due to acari or pediculi, ointment of sulphur, white precipitate, or stavesacre speedily cures, by destroying the insects and their ova. If nits persist about the pubic hairs, a lotion containing bichloride of mercury and acetic acid will dissolve them. Ascarides are destroyed by a

carbolic lotion (1 in 60); but general, rather than local, treatment should be relied upon for their eradication—iron, quinine, cod-liver oil, together with enemata of hamamelis, lime-water, iron, etc.

The vegetable parasites are very efficiently treated by unirritating parasiticides, *e.g.*, borax, boracic acid, sulphurous acid, etc. Here I would again emphasise the fact that most of the favourite remedies for vulvar pruritus are parasiticides. It suggests that—whether from the sugary pabulum provided by diabetic urine, or from alteration in the nutrition of the parts from neurosal impairment, or from a combination of the two, when coincident—the immediate exciting cause of pruritus is, in numerous instances, the growth upon the implicated parts of low forms of vegetable growth.

Friedreich alleges that the pruritus is due to the development of fungous organisms, and my own observations are certainly confirmatory of this view. It is a curious clinical fact, that patients are often freed for days from itching by a single application of a parasiticide; I have observed this repeatedly in glycosuric cases, after the use of a strong borax lotion. It is best to use such remedies in a fluid form, for, when necessary, powerful combinations may thus be made in the unhappily intractable cases. In my experience, fatty preparations of drugs do not suit so well for local application as non-fatty; and yet great relief may be afforded by some ointments, as we shall see presently.

Many cases of pruritus vulvæ are promptly relieved by a borax lotion, and it is well to use this simple and efficacious remedy where not contra-indicated. A drachm to five ounces of warm water is a good standard strength, but a stronger solution is usually needed, seldom a weaker. Hydrocyanic acid may be added—say 3 j. of the dilute acid to 3 x., or morphia (gr. ij.), atropia (gr.  $\frac{1}{2}$ ), aconitia (gr.  $\frac{1}{2}$ ), or veratria (gr.  $\frac{1}{2}$ ). Infusion of tobacco (half an ounce to the pint) alone relieves some cases, and forms a good vehicle for borax or boracic acid. It is not well to use glycerine with the borax as a rule, as it is apt, owing to its affinity for water, to aggravate the irritation. Some find relief from chloral lotions, but the drug has not always suited. Strong decoction of poppy is a soothing vehicle for borax, etc. Ice alone will relieve some; while others can get relief only from the use of very hot water. In excessively severe cases, the ether-spray might be tried.

Boracic acid is an excellent remedy; but, being much less soluble in water than borax, it is not so handy as a lotion. It may be combined with hydrocyanic acid, morphia, atropia, aconitia, veratria, etc. In the form of ointment, where fats do



not disagree, it often soothes greatly. A non-rancid fat should alone be employed as the vehicle, *e.g.*, freshly made spermaceti cerate, vaseline, fossiline, or purified benzoated lard, etc.

Lotions of iodine occasionally answer, *e.g.*, two drachms of iodine in ten ounces of elder-flower water. Electricity may afford relief in neurosal cases. Probably faradaism would be the preferable form.

In simple vulvitis, lead, borax, or carbolic lotions relieve. An ointment of calomel or bismuth is also good. Malignant affection of the parts call for appropriate treatment, such as ablation, where practicable; but sedative applications (conium, opium, belladonna) alone are often all that we can employ.

Urethral caruncles should be removed; and urethritis, gonorrhœal or other, treated *in loco*. Cystitis, stone, and kindred vesical affections and renal diseases, must be treated according to their several indications. Success is unattainable if they be overlooked. Vaginitis, gonorrhœal or otherwise, demands thorough treatment. The packing of the upper part of the vagina with a tampon soaked in glycerine, with carbolic acid, lead, tannin, chloride of zinc, or borax, seems the most prompt method of cure; but injections of these agents may suffice, and may be preferable. When the itching is associated with chronic metritis, iodised tampons are useful; and so are copious irrigations of the parts with warm water.

When vulvar irritation arises from acrid discharges proceeding from the uterine cervix or cavity, the use of a tampon filling the top of the vagina is most efficient. Cotton-wool, iodised or carbolised, answers well. As glycerine is apt to excite a watery flux, it is not always admissible, but may now and then be required. Absorbent wool, dusted with iodoform, boracic acid, morphia, tannin, camphor, chloral, and such like, may be packed against the cervix uteri, so as to arrest and disinfect virulent discharges; the choice of drug being guided by the form of disease present. It is necessary to attach a string to each tampon to facilitate its withdrawal. Vaginal and pudendal pruritus, arising from acrid uterine discharge, is mostly seen in elderly women, and may be accompanied merely by glazy redness around the ostium vaginæ. Search for uterine discharge may, therefore, be necessary. I have seen it in cancer of the fundus uteri, as well as in senile catarrh.

Local treatment by the tampon may be demanded in malignant disease of the uterus, and also in fibroids and polypi when accompanied by irritating discharge, *e.g.*, in disintegrating calcified growths. Removal of the diseased structures is preferable where practicable; and the same may be said of cases dependent upon ovarian growths. Urticarious itching is the form of pudendal irritation mostly seen in association with

ovarian tumours. A lotion of bicarbonate of soda, or one of borax with hydrocyanic acid, generally relieves. Magnesia internally is useful. When there is previous turgescence of the vessels of the part, as may be seen from stasis in some pelvic effusions, relief is afforded by the watery flux provoked by the presence of a well-soaked glycerine tampon; and a mercurial and saline purge is helpful when portal congestion is present. Eczema—often symptomatic of glycosuria, remember—may be very obstinate. Dusting freely with fine oxide of zinc answers well when ichorous weeping is abundant. If fissure be present, a poultice formed of the clot resulting from the addition of two drachms of liquor plumbi to ten ounces of new milk is most useful. Sometimes calomel ointment will alone relieve, as in certain instances of anal mischief; or bismuth may answer, dry or otherwise. Mercurial ointment suits certain cases excellently.

Angry ecthymatous spots appear to yield only to calomel, either dry, or in the form of ointment or of black wash. Opium is a valuable adjunct, both internally as well as externally.

Herpetic eruptions are benefited by a small mercurial dose followed by a saline purge, as the effervescent sulphate of soda, and the local use of borax lotion. If they be very severe, hydrocyanic acid and other local sedatives may be necessary; but it must be borne in mind that these herpetic manifestations generally run a definite course, the vesicles dying away completely. They are often accompanied by lithiasis, and may excite preputial herpes in the male.

It is unnecessary for me to dilate further on the importance of recognising diabetes as a cause of pruritus vulvæ. When the parent disease is discovered, those restraints upon diet, drink, etc., which observation and experience have taught us to be necessary, should be strictly enjoined. Unhappily, we have no cure for confirmed diabetes, but much may be done by judicious treatment and management, alike for those who are threatened with glycosuria, as for advanced cases. Immense comfort may be secured by the habitual use of cleansing ablutions, and of borax or boracic acid.

Gouty diabetics may experience much benefit from a course of the Bath waters and baths, or from those of Carlsbad, as I have seen there; but I doubt whether confirmed and advanced diabetics are so relieved. The insomnia of diabetic pruritus vulvæ sometimes shows a gratifying amenability to codeia, in the form of one-grain doses in pill. The bromides are also useful as hypnotics.

The distress that pregnant women sometimes experience, especially towards the latter months, may be terrible. When associated with aphthous ulceration, and the *oidium albicans* is present, nothing relieves more quickly than a lotion of sul-



phurous acid. Some prefer the hypo-sulphites, and in either case prolonged use is undesirable. As sulphurous acid is very volatile, it is best to mix a tablespoonful of the pharmacopœial solution with half a pint of warm water, barley-water, or almond emulsion, freshly for each occasion. Another very useful lotion is formed by two drachms of bicarbonate of potash in half a pint of water. This should also be injected into the vagina; it checks the discharge, often alkaline, which seems to excite irritation. Borax is again a valuable agent, and so is lead.

In some cases, relief is only obtained after treating the cervix uteri; as when aphthous ulceration is seen around the os. Nitrate of silver, lightly used, suffices. Bromide of ammonium internally is highly serviceable. Attention should be paid to the state of the bowels, and to the hepatic and renal secretions, for in many cases elimination is defective. Turkish or hot-air baths exert a better effect over some of these cases than any ordinary treatment; and the same remark applies to certain other varieties of pruritus vulvæ, *e.g.*, those seen in the obese, gouty, and (senile) pruriginous. Jaborandi may prove very helpful under similar circumstances, by producing profuse diaphoresis. Diuretics—juniper, broom, potash, lithia, etc.—are often beneficial, as in gouty cases, especially when combined with colchicum. Restrictions as regards meat, beer, and wines, should be imposed on the subjects of lithiasis.

When vulvar pruritus appears to be part of a general prurigo senilis, besides the local applications already indicated, a lotion of bromide of potassium may afford ease, as has been shown by Dr. Gueneau de Mussy. The same drug given internally is helpful, the affection appearing to be part of a general nervous erethism. Arsenic exerts a controlling effect in some instances of senile prurigo, as well as in those due, as the French allege, to the darts of diathesis.

Arsenic may be said to be indicated in the neurosal forms, and especially when there is marked loss of flesh. It has appeared to me to benefit most those who are the subjects of leucoderma.

It remains only to remark that, in the intractable cases, frequent changes of remedies may be inevitable for the relief of torment. Chloroform locally applied answers occasionally; it may be used in the form of vapour, liniment, ointment, or lotion. Bichloride of mercury, also a parasiticide, gives relief to some in the form of a lotion, but it requires caution in its use. Used in the proportion of gr. i. to gr. v. to ʒ viij. of mistura amygdalæ, it may afford great relief.

I have no experience of section of the pudic nerve in inveterate cases, nor am I aware that it has ever been practised; but

Sir J. Simpson mentions that he once severed the skin from the subjacent structures, with considerable benefit.—*British Medical Journal*, March 5, 1881, p. 328.

---

#### 70.—ON THE DIAGNOSIS OF TUMOURS OF THE MAMMA.

By Dr. SAMUEL W. GROSS, A.M., Surgeon to and Lecturer on Clinical Surgery in the Jefferson Medical College Hospital.

Dr. Gross sums up his conclusions on this subject in the following propositions, these conclusions being based on cases which occurred in his own practice, and those collated from various sources.

1. An uniformly hard, perfectly movable, nodular, slowly growing tumour, particularly if it be seated at the upper and outer part of the gland of impubic subjects, and of married women toward the twenty-third year, and be free from ulceration, alterations in the skin, veins, nipple, and lymphatic glands, is a solid fibroma, and the diagnosis is strengthened by the presence of several growths in one or both breasts.

2. A hard, lobulated, peripheral tumour, or one which, after having remained stationary or progressed slowly for several years, suddenly and rapidly acquires a large volume, assumes an unequal consistence, being firm at some points and soft and fluctuating at others, occurring toward the thirty-sixth year, unaccompanied by lymphatic involvement, but attended, possibly, with discolouration of the skin, deformity of the nipple, and limited superficial adhesions, and, it may be, with dilatation of the veins, discharge from the nipple, and ulceration and fungous protrusion, is a cystic fibroma.

3. A firm, rapidly growing, peripheral tumour, appearing in prolific married females at about the thirty-seventh year, with, possibly, discolouration and adhesion of the skin, and ulceration, but without deformity of, or discharge from, the nipple, or enlargement of the glands, is a solid sarcoma. A tumour possessing these attributes, and occurring towards the thirty-second year, is probably a firm, spindle-celled sarcoma, while one developing at about the forty-second year is more apt to be a firm round-celled sarcoma.

4. A lobulated tumour, particularly if it involve the greater part of the mamma, of quick growth from the commencement, or progressing rapidly after having increased comparatively slowly for some time, of large size, of varying or unequal consistence, occurring toward the thirty-third year, in prolific married subjects, and attended with discolouration of the skin, ulceration, enlargement of the veins, and, possibly, with discharge from the nipple and limited adhesions, or, it may be, with deformity of the nipple, and glandular enlargement, is a



cystic sarcoma. A very rapidly progressing tumour of soft, apparently fluctuating, consistence, with stretched skin and enlarged veins, appearing in young girls before puberty, and in young married women, is a medullary sarcoma, which may be solid or cystic, and is, as a rule, composed of small spindle-cells.

5. A solitary, rapidly and continuously growing, although not very bulky, rather firm, or, possibly, soft tumour, occurring at about the forty-fifth year, with limited discolouration of the skin, but not fixed to the chest, and attended, possibly, with deformity of the nipple, superficial adhesions, ulceration, dilatation of the veins, and enlargement of the axillary glands, is a solid myxoma.

6. Cystic myxoma possesses the same consistence and growing attributes as the former variety, but it develops at about the forty-eighth year, and is liable to be attended with discolouration, adhesion, and ulceration of the skin. The veins, nipple, and glands, however, are normal.

7. A hard, heavy, nodular, solitary, very slowly and equably increasing tumour, especially if it develop in the immediate vicinity of the nipple of a married woman toward the thirty-fifth year, and if it be accompanied by adhesion and discolouration of the skin, and ulceration, and, possibly, by deformity of the nipple and enlargement of the glands, but free from fixation to the chest and dilatation of the veins, and preceded by a discharge from the nipple, is a cystic adenoma. A solid adenoma cannot be distinguished from a solid fibroma.

8. A densely hard, inelastic, irregular, solitary, slowly growing tumour, occurring in prolific married females toward the forty-eighth year, inseparably connected with the mamma, accompanied by induration and enlargement of the associated lymphatic glands, retraction of the nipple, infiltration of, and possibly nodules in, the skin, ulceration, and fixation to the chest, and, it may be, by a discharge from the nipple, is a scirrhous carcinoma; and the diagnosis is strengthened if there be a history of heredity, if the tumour were preceded by psoriasis or eczema of the nipple, or if it developed from an induration left by puerperal mastitis.

9. A soft, lobulated, voluminous, solitary, and rapidly increasing tumour, occurring in the same class of women, at about the fiftieth year, and attended with infection of the glands and skin, retraction of the nipple, fixation to the chest, and, possibly, extension to the opposite breast, but without discharge from the nipple, or marked tendency to prominence of the veins or ulceration, is a medullary or encephaloid carcinoma.

10. A hard, very slow growing, small, solitary tumour, occurring toward the forty-fifth year, with adhesion to the skin, and,

it may be, nodules in that structure, prominence of the veins, retraction of the nipple, and enlargement of the glands, and, possibly, with invasion of the opposite breast, fixation to the chest, ulceration, and discharge from the nipple, is a colloid carcinoma.

11. A densely hard, irregular and knotty contracting and small solitary tumour, occurring at about the forty-seventh year, and attended with retraction of the nipple, infection of the glands and skin, and, possibly, distinct tubers in the latter structure, ulceration, and immobility on the chest, is an atrophying scirrhus.

12. A slowly increasing, solitary, nodular, or slightly lobulated tumour, occurring after the meno-pause, covered by thinned and discoloured skin, fluctuating, and probably discharging by the nipple, but without enlargement of the veins or glands, and without fixation to the chest, is an involution cyst.

13. A solitary, smooth, firm, and elastic, or, possibly, fluctuating tumour, occurring in the vicinity of the nipple of young and prolific married women, of moderate volume, of slow growth, and unattended with alterations in the veins, nipple, skin, or glands, or with adhesions, but liable to ulceration and enlargement of the glands if it inflame, is an evolution cyst.

14. A solitary, slowly growing, not bulky, fluctuating or semi-solid tumour, occurring near the nipple of lactating women, and unattended with changes in the coverings of the mamma or in the glands, is a lacteal cyst.

15. A slowly growing, small, smooth, round, firm, and elastic or fluctuating, solitary tumour, occurring between the ages of twenty and thirty years, seated at the upper and outer border of the breast, and not near the mammilla, with a disposition to ulcerate, but without other changes in the skin, veins, or glands, is a hydatid cyst.—*London Medical Record*, Nov. 15, 1880, p. 437.

#### 71.—DYSMENORRHOEA BY RETENTION—TREATMENT.

By Dr. ROBERT BARNES, Obstetric Physician to  
St. George's Hospital, &c.

Dysmenorrhœa membranacea, other diseases of the mucous membrane, hypertrophy of the uterus, displacement, constitutional disorders, may arise in very different ways and from various causes. We will deal at present simply with obstruction and its results.

It is not desirable in every case at once to resort to the *ultima ratio* of enlarging the os externum by incision. In very young, and single women especially, it is only proper to exhaust



what are called "the usual remedies," although I must warn you that they usually fail. You take a careful survey of the system, interrogating all the functions, and do your best to correct whatever you find to be out of order. Thus having removed as well as you can all complications, you apply particular remedies to the relief of the distressed uterus. The complications, as constipation, dyspepsia, anæmia, are best dealt with in the intermenstrual periods. Then, when the period comes, you meet the difficulty in its simplest form. Pain, pelvic at first, frequently especially intense in the left iliac region—and therefore often supposed to signify ovaritis—then radiating to the hips, lumbo-sacral region, and thighs, commonly begins some days before the appearance of the flow. Generally the pain is at its acme on the first day of the flow, but often it goes on for two or three days, and throughout the flow. The pain that attends the flow is different in character from that which precedes. It is spasmodic, like colic, forcing, expulsive, resembling the pangs of labour, and the conditions are very analogous. The uterus is labouring to expel its contents, struggling to overcome a mechanical resistance. As commonly happens when the uterine fibre is put upon the stretch, especially in the cervical region, vomiting may occur. The whole nervous system is disordered. Partly under emotional influence, partly from disturbance of that regulating power which controls and guides in harmonious relation the several functions, diarrhœa may set in. Various other nervous symptoms break out. Hysteria, convulsions even, epileptic or epileptoid, neuralgia are manifest in severe cases and in impressionable subjects. The pain is often described as agony. The subject writhes upon the bed or floor. The mind, in spite of resolute will, loses its balance, and it gives way to delirium. By and by, the menstrual difficulty being overcome, things gradually resume their accustomed order, and the patient may for two or three weeks manifest perfect health. But these monthly blows struck at the nervous centres, these ever-gathering storms, cannot be encountered without leaving traces of damage. It can hardly be expected that the uterus itself, the centre of trouble, should escape unhurt. The seat of repeated and prolonged congestions, far surpassing the ordinary physiological hyperemia, the mucous membrane of the cervix undergoes chronic thickening, its glands become hypertrophied, secrete in excess, and the secretion, from glairy, bland, and clear, becomes muco-purulent and irritating. This, like the menstrual blood, is liable to retention; at least, it finds imperfect issue through the narrow os with difficulty and pain.

Now comes the crucial test of treatment—"Curatio ostendit morbum." The old saw never had a more satisfactory application.

Now, having fairly exhausted "the usual means," satisfied that they have failed, we arrive at the conclusion that it is best to remove the mechanical obstruction. How shall we remove the obstruction? By dilating the narrow os externum uteri, and by remedying flexion. If there is flexion only the treatment will, in the first place, be simply limited to restoring the uterus to its proper form and position. We will now consider how to deal with stenosis, and we have first to determine the exact seat of the stenosis. This, I believe, to be almost always at the os uteri externum. You see—every week we see examples amongst the out-patients—a minute round aperture that barely admits the sound, instead of the normal fissure, the classical os tincae, which opens freely into the cervical cavity. When you pass the sound in such a case, two things are generally observed; first, the partial momentary dilatation of the sound allows the escape of a mucus, sometimes like molten glass, clear, viscid, sometimes viscid and turbid from admixture with pus-globules. This is the secretion from the irritated inflamed glands of the cervical canal. It cannot escape freely through the narrow os, more or less of it is long pent up, and becomes a source of irritation, often of pain, felt in the intermenstrual period. Commonly you also see the vaginal portion red, congested, and the minute os looks deeper red, angry, its epithelium partly or wholly shed, so that the slightest touch with the sound causes a little bleeding. And now, if pass the sound gently to the isthmus or os internum, you may find an arrest at this point, but keeping well in mind the axis of the uterus, guiding the point of the sound by a finger upon the cervix you will rarely fail to pass through the os internum. This is proof that the seat of obstruction is not here; for the natural bore or calibre of the os internum, as you may see by these sections of the uterus, is just large enough to admit the sound. Why should we make it larger? I know of no valid reason. Anatomy and clinical experience alike protest. It is not only superfluous; it may be dangerous. The danger is especially great if dilatation be effected by cutting. If you look at these sections of the uterus and drawings again you will see that bloodvessels, in profusion and of considerable size, penetrate the substance of the uterus at this level. Large veins without valves and small arteries gape, and when divided are apt to bleed profusely, and present a ready entrance for septic matter. Nor can we be secure against dividing them. The incision must be made by a knife cutting out of sight; it must be difficult to regulate to a nicety the depth of the incision, the more so if you use one of those ingenious two-bladed machines, more or less automatic, and in so far out of the control of the operator. The only kind of assent I could give to the incision at the os internum would



be to make a very slight nick, so as to divide the mucous membrane and some of the superficial circular fibres of the muscular coat. This may allay spasmodic sphincteric action. But I give even this qualified assent with considerable reserve, believing that the cases where it might be useful are rare. Of course, I am now speaking only of cases of dysmenorrhœa from stenosis. Freer incisions are sometimes eminently useful in severe metrorrhagia with fibrous growths.

Almost then excluding incisions of the os internum, we may turn back to the modes of dealing with the os externum. And we may first dispose of the alternative method of dilating by bougies, laminaria tents, and various expanding instruments. This proceeding is free from the risk of bleeding. If cautiously pursued there is not much danger of any kind. But if often repeated it becomes exceedingly harassing to the patient; the action of the laminaria tent is commonly very painful, vomiting often attends the expansion. After a time, usually very short, the canal will have returned to its pristine narrowing, and the proceeding has to be repeated again and again. To a certain extent the same objections apply to dilatation by graduated bougies, and other dilators. The pain is less, the regulation is more delicate, but the gain is not more enduring. Thus I have known not a few cases in which this kind of dilatation had been practised, at short intervals, over a period of twelve months or more, without any compensating gain. Then there is the method of rapid dilatation. This is effected by instruments made with expanding or diverging blades on the principle of similar instruments devised for the urethra. This method is occasionally useful. The objections are that it hardly applies to the cases under discussion; that it is very painful unless anæsthesia be induced; that the gain is transitory; and that it entails no slight risk of metritis. Indeed, no mode of bloodless dilatation is free from this last danger. Instrumental dilatation, whether gradual or rapid, involves some degree of violence, and the penalty may be inflammation—that is, metritis, pelvic cellulitis or peritonitis.

Not rejecting these methods of dilatation, least of all that by bougies, I can only accord them a secondary place. The strictly limited incision of the os externum as I practise it, very nearly resembling the “discission” of the late Dr. Peaslee of New York, is at once less painful, more rapid, more certain and more safe.

I need not dwell long upon the operation. You have so many opportunities of seeing it done that description is unnecessary. It consists simply in enlarging to a very moderate extent the os externum by help of a pair of scissors constructed *ad hoc*, one blade terminated by a probe-end, which enters the os, the other

blade terminated by a hook, which seizes and fixes the vaginal portion at the point desired. One stroke of the scissors divides the intervening tissue in a straight line. The proceeding is then repeated on the other side of the os, and the operation is completed. Two useful objects are at once achieved—first, the gorged vessels are relieved; you have gone far to cure the congestion and to relieve the chronic endometritis which so commonly attend this stenosis. This incision you have seen is equivalent to scarification, often a most effective remedy in congestion from other conditions. It is infinitely better than leeching, which I have long discarded for several reasons other than its inferiority to scarification—firstly, a leech is not an intelligent animal; it will not always bite exactly where you wish; sometimes it is obstinate, and will not bite at all; and it is not always a clean animal. It is more than suspected that its bite may, under certain circumstances, either inherent in the animal or in the patient, cause unhealthy inflammation. From this danger scarification is wholly free; it is, besides, more expeditious and more accurate. I may here mention that one of the conditions often met with in chronic congestions and inflammations of the vaginal portion is obstructed glands—the so-called ovula Nabothi. These form the foci of little inflamed areas. The cure for this condition is to prick or divide them with the scarifier; and it is remarkable how prompt and efficacious this treatment often is. It is true that these ovula Nabothi are not common in the nulliparous uterus. They most frequently occur in multiparæ, as a consequence of chronic inflammation—hypertrophy—of the cervix. In cases where the division of the os externum is called for, this scarification, or opening of ovula Nabothi, is, however, sometimes useful. It may be done at the same sitting. Now, these things, both essential to cure—the topical bleeding and the cure of obstructed glands—cannot be effected by bougies or other modes of dilating. The other immediate effect of division of the os externum is the letting out of imprisoned irritating mucus.

Now you have a patulous os externum, which means that you have secured free exit for uterine discharges, and free access to the interior of the cervical and uterine cavities for topical treatment. But, in truth, the chronic catarrhal state of the mucous tract is frequently soon relieved by the liberation of the os externum. There is a tendency to contract again after the operation. To meet this a variety of intra-uterine pessaries or stems have been devised. A modification of the late Dr. Wright's is the best. The principle of this lies in the divergence of the two halves of the intra-uterine portion by elasticity so as to maintain itself *in situ*. It is made of one piece of vulcanite. The next I should prefer is Meadows' glass stem. Both these are perfectly clean, and little apt to cause foul discharge. The elastic gum pessary is



not free from this objection. The use of it entails some risk of causing septicæmia, local or general. But as a matter of experience, I do not find it necessary to use any contrivance of the kind. The simple operation is less painful, and not less satisfactory.—*Lancet*, Dec. 11, 1880, p. 923.

---

72.—CASE OF MALIGNANT DISEASE OF CERVIX UTERI—  
OPERATION WITH GALVANIC CAUTERY.

Mrs. S., aged 34, was admitted into the Western Infirmary, Glasgow, on 18th August. She presented an extremely anæmic appearance. She stated that in May last she stopped nursing, and that shortly after she began to menstruate. The menstrual periods, however, continued so long and the discharge was so excessive as quite to blanch her. In addition, there was a constant, profuse, foetid discharge, which latterly had become tinged with blood.

On vaginal examination, a cauliflower growth was found replacing in large part the cervix uteri, and of sufficient size to fill the vagina, though the vaginal tissue was still unaffected.

31st August.—To-day, by means of the galvanic ecraseur, the cervix was removed on a level with the roof of the vagina, and apparently at a point where the uterine tissues were still free from disease. A Grove's battery was used, six cells being sufficient to heat up perfectly and immediately a loop of platinum wire, 4 inches long, and considerably thicker than that commonly used. Pains were taken by keeping a sound in the bladder, to avoid injury to that organ. One small vessel had to be ligatured, but the hemorrhage, as in the previous case, was trifling. The vagina was well washed with carbolic solution, and stuffed with oiled lint. The patient was kept in bed for some days, and the vagina syringed out several times a day with carbolised water. There was no hemorrhage, and but little or no discharge.

Patient was dismissed on 16th September, when the wound was almost entirely healed, and looked quite healthy. She was seen again about a month later, when the parts were found quite healed, and apparently free from disease. There was no discharge, the canal of the cervix was patent, and no feeling of discomfort was complained of.

*Remarks.*—In a case operated on in this way some months ago, parts of the vagina were parboiled by the hot fluids from the neighbourhood of the wire. In the present case a finger was kept in the vagina, and as soon as it got uncomfortably warm, the electric current was shut off and the canal irrigated with cold carbolic water, the operation was then resumed, and advanced another step till the irrigation had to be repeated. The Grove's cells answered admirably, and not a moment was

lost waiting on the heating of the wire. The thick platinum wire, although less liable to break, was more difficult to manipulate.—*Glasgow Medical Journal*, Dec. 1880, p. 506.

### 73.—REMOVABLE AXIS-TRACTION RODS FOR MIDWIFERY FORCEPS.

By Dr. J. S. LYON, M.A., Surgeon to the Dispensary of the Western Infirmary, Glasgow.

It may be conceded that the principles on which M. Tarnier's midwifery forceps is constructed are correct; and that the objects at which he aimed are most desirable, if they can be obtained, and without counterbalancing difficulties.

These principles may be briefly summarised.

1. *To allow traction to be made exactly in the axis of the pelvic curve*, whether the foetal head be above the brim of the pelvis, or in its cavity.

2. *To allow mobility to the foetal head to follow the direction impressed on it by the irregularities of the maternal pelvis.*

3. *To indicate to the operator the exact direction in which he should at any moment make traction.*

British forceps with the pelvic curve, such as are ordinarily used (*e.g.*, Simpson's, Matthews Duncan's, Barnes', or Robertson's), fail to fulfil the first of these requirements, when applied to a foetal head at the brim of the pelvis; and traction can only be made approximately in the proper direction. According to M. Tarnier, they fail almost equally in making traction in the proper curve, whether the head is in the cavity or at the outlet.

These forceps also certainly fail, to a large extent, to fulfil Tarnier's second requirement—that of allowing sufficient mobility to the foetal head to follow its natural direction; and also his third—of indicating the direction in which traction ought to be made; for, though it is customary to speak of “humouring” the forceps, this can only be done by an experienced operator, and even by him only to a limited extent, more especially if he requires to exert much force in traction.

But although M. Tarnier's principles are admitted, his highly ingenious forceps will probably never—in this country, at least, come into ordinary use, from its complexity, its enormous size, and its high price; and I have long thought that all its advantages might be gained by certain removable additions to the ordinary pelvic curved forceps.

The “new tractors,” suggested by Mr. H. Morgan (*British Medical Journal*, June 29, 1878), and those of Dr. Duke (*Retro-spect*, vol. 79, p. 306), seemed to me steps in the right direction, but only small steps—inasmuch as their “tractors” are straight rods, and without any provision for allowing motion or rotation.



In June 1880, Prof. A. R. Simpson of Edinburgh brought out his adaptation of "axis-traction rods" to a slightly modified pattern of Sir J. Y. Simpson's forceps. They were figured in *Retrospect*, vol. 82, p. 308. The objections to them seem to be, that the traction-rods are permanently attached to the forceps—so that the latter cannot be used without them (even for

extraction of a head on the perineum); and that the right traction-rod is much in the way during the introduction of the upper blade, and, in order to allow locking of the forceps, requires to be "pushed forwards past its shank." Mechanically, they are weak at the point of attachment of the rods to the blades of the forceps.

The axis-traction rods, which I now wish to bring before the profession, are the result of many experiments and trials; and are, I think, free from any of these objections. They provide for all M. Tarnier's requirements as completely as his own instrument; and have, in addition, the following advantages—they may be fitted to any pattern of pelvic curved midwifery forceps; they are per-

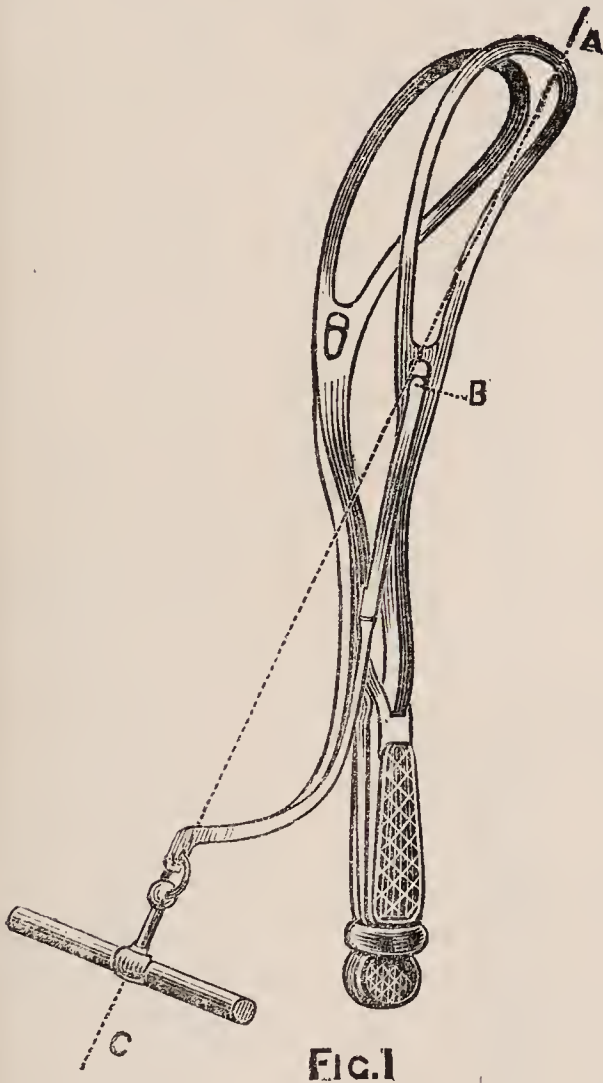


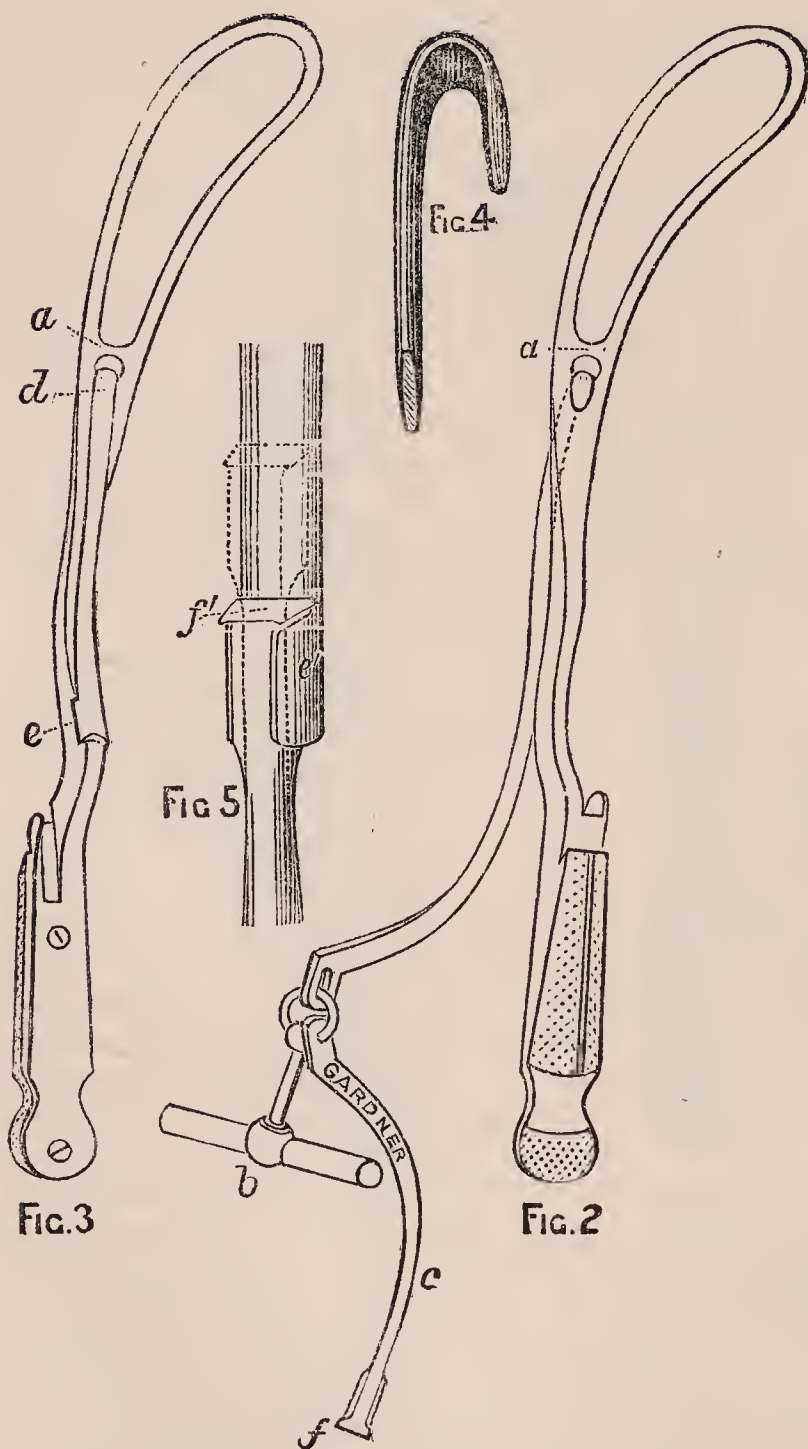
FIG. 1

fectly simple and easy to use; and do not, in the slightest degree, complicate the introduction or locking of the blades of the forceps. If not required, they can be detached completely—leaving the forceps unaltered, except by the addition of a small bridge of metal soldered across the bottom of each fenestra (Figs. 2 and 3 *a*), so as to form a rounded aperture, into which the thin flattened hook (Fig. 4) of each traction-rod slips, when at right angles to the blade on its outer face, but only in this position. This bridge prevents the hook from slipping out when the rod is brought parallel with the shanks.

The rod of the left or lower blade has attached to its free extremity the traction-handle, with its swivel-joint (Fig. 2, *b*),

and the lower half of the right rod (Fig. 2, *c, f*), which is divided about its middle.

The upper half of the right rod hooks into the aperture of



The woodcuts represent the removable axis-traction rods fitted to Roberton's forceps.

Fig. 1. General View.

Fig. 2. Left or lower Blade, with its Traction Rod and lower half of Right Rod (*c*), both attached to Swivel Traction Handle (*b*).

Fig. 3. Right or upper Blade, carrying upper half of its Rod (*d* *e*) clamped on to Shank at (*e*).

Fig. 4. The Hook by which the Rods are attached to Forceps.

Fig. 5. The Wedge bolt (*f* *e*), by which the Wedge of Right Rod (*f*) is connected with the Clamp of the upper portion (*e*).

its blade; and is so contrived, that its lower end springs on with a light clamp to the shank of the forceps, at a distance above the lock just sufficient to keep clear of it. (Fig. 3, *d, e*.)

The junction between the upper and lower portions of this right rod (Fig. 3, *e*, and Fig. 2, *f*) is effected by means of an



extremely simple and easily worked wedge-joint or lock, which is, at the same time, perfectly strong and efficient. This joint is shown in Fig. 5, *é, f'*.

To use these axis-traction rods, the left traction-rod is hooked into the left or lower blade of the forceps; and, it being held, along with the handle, the blade is introduced as usual. Then the small upper portion of the right rod is hooked into the right blade, and its lower end sprung on to the shank. (Practically, it is as well to keep it always *in situ*, as it is more easily carried thus, and cannot be mislaid.) This blade can then be introduced in the ordinary way, and the forceps locked—as the rod does not, in the slightest degree, interfere with either the introduction or the locking. A stout India-rubber ring (similar to an umbrella ring, but stouter) is now to be slipped over the handles of the forceps, or they may be tied together; and, the lower end of the right rod being freed from its attachment to its shank, its lower portion, at present hanging loose, attached to the traction-handle (Fig. 2, *c*), is brought up and guided by the finger into its catch (Fig. 3, *e*).

The rods being now complete, traction is to be made entirely by the traction handle in the line A, B, C, Fig. 1, the handles of the forceps being left perfectly free, and merely held together sufficiently firmly to prevent the blades from slipping, by the India-rubber ring, or by tape.

As the foetal head descends in the pelvis, the handles of the forceps move forwards, and indicate that the direction of traction is to be altered, so as to keep the traction rods parallel and just in contact with the shanks, as in the use of Tarnier's instrument.

It will be observed that the junction of the two portions of the right rod can never require to be made higher up than about an inch from the vulva, and this only when the head is high and the maternal pelvis deep.

The mechanical details have been well and carefully worked out for me by Mr. J. Gardner, surgeons' instrument maker, 45, South Bridge, Edinburgh, who is prepared to fit these traction-rods to any pattern of pelvic curved forceps, at a moderate cost.

Since writing the above, a paper has appeared in the Edinburgh Medical Journal for February 1881, by Dr. Archibald Reith, of Aberdeen, condemning all axis-traction forceps, and asserting that traction in the true axis of the brim of the pelvis is mechanically impossible. I think that, if Dr. Reith will take the trouble to study the laws of mechanics, and also to test practically (as he evidently has not done) traction-rods, such as I have described, he will find that it is not only possible, but easy, to make traction in the curve of the pelvic axis.—*British Medical Journal*, March 19, 1881, p. 425.

## ADDENDA.

---

### 74.—ON SURGICAL ANÆSTHESIA MAINTAINED BY THE COMBINED USE OF MORPHIA AND CHLOROFORM.

By ALEXANDER CROMBIE, M.D. Edin., Superintendent of the Medical School and Mitford Hospital, Dacca, Bengal.

Claude Bernard's remarkable observations on the effect of morphia in reproducing and prolonging the anæsthetic action of chloroform do not seem to have attracted the attention of English surgeons. Even on the Continent, notwithstanding their obvious great practical value, the experiments that were made, and which were entirely successful, as a corroboration of those which had been made on the lower animals, do not appear to have led to any general adoption of the combination in practical surgery.

[Dr. Crombie gives the following interesting case.]

An old native woman had been run over by a carriage in the street, and was brought into hospital with a compound fracture of both bones of the leg above the ankle. She was under the care of Dr. Cutcliff, who decided to amputate below the knee. She was placed on the table, and immediately after the commencement of the inhalation of chloroform I injected twenty minims of the ordinary solution of hydrochlorate of morphia (one-sixth of a grain) under the skin of the front of the abdomen. The stage of excitement was only faintly expressed, and on the cornea becoming insensitive to touch I removed the chloroformed towel from her face, and intimated to the surgeon that she was ready. There was some delay in securing one of the branches of the posterior tibial artery, which had been cut short, high in the apex of the wound, and the operation lasted exactly half an hour, from the time when she was "ready" till she was lifted on to a stretcher and carried off to the ward. During the whole of that time she lay in a calm, peaceful sleep, and I, as administrator of chloroform, had nothing to do but test the sensitiveness of the cornea from time to time. Twice only did she show signs of returning to consciousness, when the re-application of the towel to the face for a few seconds sufficed to restore complete anæsthesia.

The result in this case left nothing to be desired. The anæsthesia, once established under the co-operation of morphia and chloroform, was kept up for the space of half an hour by



the inhalation, on two occasions only, of a few additional drops of chloroform, probably not amounting to half a drachm altogether. I have adopted the same procedure in every operation of any magnitude which I have performed during the past seven years, without any material variation, and invariably with a similar happy result. At the Calcutta Medical College Hospital, and more recently as Superintendent of the Vernacular Medical School and Mitford Hospital at Dacca, where nearly two hundred operations are performed under chloroform annually, I have continued to advocate, both by precept and example, the combined use of morphia and chloroform in the production and maintenance of surgical anæsthesia.

The advantages derived from the combination are first, the prolongation of the anæsthetic effect of the chloroform, once it has been established; and secondly, the small quantity of chloroform required to keep it up afterwards. The first advantage is most conspicuous in operations about the mouth and face. The prolongation of the anæsthesia originally induced in this way is often so great as to enable me to perform operations of the first magnitude without being interrupted by the necessity of recommencing the inhalation of chloroform on account of the patient returning to consciousness in the middle of it.

In March 1878, I removed the right superior maxilla from a native woman, aged 45. After the commencement of the inhalation of chloroform, 20 minims of the ordinary liq. morph. hydrochlor. were injected into the cellular tissue of the upper part of the front of the abdomen. When she had become completely anæsthetised the chloroform was removed from her face, and I began the operation, which was performed in the usual way by a single incision. The anæsthesia in this case was of such long continuance that it enabled me to proceed uninterruptedly to complete the division of the bony processes, remove the diseased bone, secure all the bleeding points, stuff the cavity and begin to stitch the skin over it, before the patient showed any sign of returning consciousness. At this stage I was obliged to desist for a few seconds for the first time during a long and difficult operation, until the anæsthesia was reproduced to enable me to complete the suturing of the superficial incision without pain.

In Jan. 1879, I removed a bony tumour from the lower jaw of a native boy, aged 16. The growth was in the position of the wisdom tooth, and involved the alveolus, and the anterior part of the ascending ramus. I got at the base of the tumour by means of a curved incision, commencing above the angle and carried round on to the body of the bone and involving the

facial artery. By dissecting up the flap so formed, I was able to remove the tumour, and leave the posterior margin of the ascending ramus, the angle and the body of the bone below the alveolus, intact; the instruments used being a small saw, bone-forceps, and a gouge. The operation was difficult and tedious, but it was only necessary to interrupt it once in order to restore the anæsthesia which had been primarily induced under the co-operation of morphia and chloroform in the usual way previous to making the preliminary incision.

The advantages of such long-continued insensibility are of course most obvious to the surgeon in operations on these parts, because of the comparative immunity from interruption. But the chief benefit lies in the fact that so very small a quantity of chloroform is required to reproduce anæsthesia, which has been originally induced under the co-operation of the combined drugs, as long as the influence of the narcotic alkaloid continues. My experience is, that once complete surgical anæsthesia has been so established, from half a drachm to a drachm of chloroform is usually sufficient to keep it up for half or three-quarters of an hour, that is to say during the whole of the time required for all ordinary surgical operations. I have thus been able to eliminate from my practice most of the risks and complications of an overdose of chloroform. Among the latter I include vomiting, which I rarely see now as the consequence of performing an operation under chloroform when morphia has been injected under the skin. Vomiting in some cases occurs very early, and often before anæsthesia is complete, but in the later stages of an operation or after removal to the ward, it is very rare indeed. I therefore invariably use morphia in combination with chloroform in cataract operations; for although the long continuance of the anæsthesia is of no consequence in these cases, the risks of vomiting are more surely avoided. Last, but certainly not least, chloroform asphyxia has practically ceased to form part of my experience of the dangers of that anæsthetic. During the past three years, at least six hundred patients have been brought fully under the influence of chloroform in my presence.

Although it has never been my misfortune to witness a death from chloroform, I have frequently seen, before I began my present practice, the temporary abandonment of an operation necessitated by the arrest of the patient's breathing, and the whole energy of the surgeon and his assistants directed to the restoration of that function, before the operation could be continued. It is true that during the first five or eight minutes after beginning the inhalation of chloroform, while the stage of excitement yet lasts, even after morphia has been injected under the skin, I not infrequently see the respiratory movements stop in a



state of full inspiration. This I believe to be due to a sort of reflex spasmodic action of the muscles of inspiration, and it is easily removed by taking away the chloroform from the face, and then giving one or two smart slaps with the open hand over the epigastrium, or forcibly depressing the lower ribs. It sometimes constitutes a considerable obstacle to the administration of chloroform when it recurs, as it sometimes does, whenever the inhalation is recommenced. It usually disappears before anæsthesia becomes complete, and if watched for and immediately removed, is without risk.

Very different is the arrest of the function of respiration, in a state of expiration, which occurs during deep surgical anæsthesia from paralysis of the respiratory centre, from the continuous inhalation of large quantities of chloroform. This grave danger has not occurred in my practice, to the best of my recollection, since I have made use of the combination of morphia and chloroform I am now advocating, and when the precautions I insist upon have been faithfully carried out. I attribute the immunity from this danger also to the small quantity of chloroform I require to give in order to keep up complete anæsthesia when it has once been induced under the influence of morphia,—and also to the great care I take that the free ingress and egress of air, to and from the lungs, are never for a moment interrupted. And this brings me to describe in detail the method by which I have obtained such good results.

It may have created surprise that I have continued to employ the ordinary solution of morphia for subcutaneous injection instead of a special solution for hypodermic use. The reason is that I have never been able to perceive the necessity for a special solution for this purpose. The common liquor morphiæ hydrochloratis has never in my hands produced the smallest pain or irritation, and it is always being freshly prepared, and is therefore not liable to alterations from keeping, such as are likely to occur in a solution kept for a particular purpose, more especially in an Indian climate. Then an ordinary hypodermic syringe holds just the quantity of it, twenty minims, which I find to be usually sufficient. I ought here to state that my experience of late years has lain chiefly amongst natives, who are generally of small build and less weight, and with nervous systems less sensitive to pain, than Europeans. Were I practising in Europe I should probably find it necessary to employ a larger quantity of morphia than one-sixth of a grain to obtain the same result; say a fourth, or a third, which was the quantity used by MM. Labbé and Guyon.

I no longer use a towel or napkin for the administration of chloroform, but a metal cup with a perforated bottom, and with a piece cut out of the side for the reception of the nose. The

chloroform is sprinkled on a piece of sponge which occupies the bottom of the cup. The whole fits loosely over the nose, mouth, and chin; so loosely that it is impossible for the most careless administrator to prevent the freest admission of air to the nostrils at each inspiration. This is not the case with a folded napkin or towel, which can be tucked closely round the cheeks and under the chin.

I next insist not only on there being nothing tight round the neck and waist, but on the upper part of the abdomen and lower part of the chest being bared; and the person charged with the administration of the chloroform is directed to divide his attention solely between the state of the respiration, which he is thus enabled to watch in the clearest way, and the condition of the sensitiveness of the cornea. The rise and fall of the epigastrium and lower ribs are the best indication that air is entering and leaving the lungs freely.

As soon as possible, that is to say before there is complete anæsthesia, as soon, in fact, as the relaxation of the muscles will admit of it readily, I cause the condyle of the lower jaw to be pushed forwards out of the glenoid cavity on to the eminence in front. In other words, I insist on the teeth of the lower jaw being brought forward well in front of those of the upper, and retained in that position during the whole duration of the operation. This is easily done by pushing the bone forward by means of the thumbs placed behind the posterior margin of the ramus and angle of the jaw. This movement forward of the lower jaw has the effect of dragging forward the tongue by its root, and at the same time the hyoid bone, in consequence of the attachments to it of the mylo-hyoid, genio-hyoid, genio-hyoglossus, and genio-hyoid muscles. Since I adopted this expedient, which I learned from Dr. S. B. Partridge, in 1873, I have entirely discarded the use of the barbarous tongue-forceps. The traction exerted by the displaced lower jaw on the hyoid bone and root of the tongue is much more efficient in preventing occlusion of the glottis, by the tongue falling backwards during deep anæsthesia, than can be effected by forcible traction by forceps applied to its tip. If this displacement of the lower jaw forwards is properly carried out, there will not be the least stertor or other sound of impeded passage of air to and from the wind-pipe, during the whole continuance of a long operation performed in a condition of the deepest insensibility. If that insensibility is of the prolonged character which is produced by the combined use of morphia and chloroform, no difficulty will be found in keeping the jaw in that position for any length of time, for the chloroform is only applied to the face at long intervals, during which the administrator has nothing to do but to keep the jaw forward and touch the cornea from time to time, the inhaler



lying at one side. Should consciousness partially return, the jaw can be kept in position by one hand, while the cup is being reapplied for a few seconds to the face. If during the performance of an operation I hear the least noise in the breathing, I know that this traction on the root of the tongue is not being efficiently maintained, and a word of warning to the assistant charged with watching the anæsthesia suffices, by directing his attention to it, to restore that free and noiseless respiration upon which I insist throughout every operation.

By these means, by attention to these details, and by the combined subcutaneous use of morphia, asphyxia has practically ceased to form part of my experience of the risks of chloroform as an anæsthetic. This I attribute to the small aggregate quantity of chloroform required to keep up deep insensibility during the whole time required for all ordinary surgical operations when morphia has been injected under the skin.

Of the other great risk of chloroform, paralysis of the heart, I have, happily, had no experience either before or since I adopted my present practice; and I am aware that this terrible accident sometimes occurs during the first few minutes of the inhalation of chloroform before anæsthesia has been established. But the danger of this accident occurring during the stage of deep insensibility will, it stands to reason, be diminished in proportion to the smallness of the dose of the anæsthetic required to cause and reproduce the anæsthesia. The combination of the hypodermic use of morphia with the inhalation of chloroform would, I am confident, if universally practised, by acting in this way, materially lessen this grave danger. One death from chloroform is said to occur in five thousand cases, so that the experience of any one practitioner is not sufficient to form an opinion of the value of any procedure calculated to avert its risks. But if I have eliminated, as I believe I have, from my practice one of the dangers of chloroform, paralysis of the function of respiration due to overdoses of the drug, it is reasonable to think that an expedient whose chief value lies in the smaller doses required to produce the desired effect will serve to diminish other risks arising from the same cause.

The advantages of chloroform over ether, in point of convenience, are so great, that only the admitted greater safety of the latter could have led to the present partial abandonment of chloroform as an anæsthetic in surgical practice.—*Practitioner*, Dec. 1880, p. 401.

---

#### 75.—ON THE TREATMENT OF ANÆMIA.

By Dr. SIDNEY COUPLAND, Physician to Middlesex Hospital.

The treatment of anæmia, apart from the removal of its cause, when this can be ascertained, may be summed up under

the head of hygienic, dietetic, and medicinal measures. On the first and second of these I need hardly dwell; their importance is self-evident. The necessity for rest alternated with moderate exercise, graduated according to the severity of the anæmia, is important. Even slight exercise is irksome and harmful until the blood is sufficiently reinforced to permit of it, and absolute rest is called for at first. The influence of air and light is of as much value in aiding restoration from the anæmic condition as their deprivation is powerful in inducing this state, and such hygienic measures as bathing act by promoting tissue metabolism. A valuable contribution to the treatment of anæmia by these means has lately been made by Drs. M. P. Jacobi and White in what is a scientific exposition of the effects produced by those who practice hydrotherapy. These writers relate cases, accompanied by analyses of the urine, where wet packs and massage were employed, in addition to ferruginous medication. The effect of such treatment was to cause increased elimination of urea, to improve appetite, and to procure sleep; and the explanation afforded is that the treatment, acting through the nervous system and the circulation, promoted tissue change, and increased the capacity of the tissues and the blood for oxygen, the passive exercise of the muscles aiding also, by quickening the circulation, in the removal of the products of nitrogenous waste.

In diet the indication is to allow meat in considerable quantity as soon as the digestive organs are capable of the work imposed on them; but where, as so often happens, the digestive power is at a minimum, then recourse may be had to meat essences, peptonised foods, and (as an extreme measure) nutrient enemata. There is frequently a great distaste for nitrogenous food among these subjects, many of whom owe their anæmia in large measure to their preference for a diet of non-nitrogenous materials, and it follows, therefore, that chief attention should be paid to this point, especially as the organs of digestion are more or less deranged by the anæmic state. As I have before pointed out, digestive derangements both induce and are induced by anæmia, and by dealing with them we often strike at the root of the condition, which, however, requires also measures directed specially to it. These measures comprise the administration of certain drugs, which are comprised under the term "hæmatinic." Of these I pass now to speak briefly.

Of all remedies iron maintains, as it always has maintained, a pre-eminence in the treatment of anæmia. It seems to act directly upon the blood-forming viscera, and probably also upon the digestive organs—*i.e.*, on the gastro-intestinal tract. No wholly satisfactory explanation has, I believe, been given of the mode of action of the iron in either of these directions, or



of the reason why the best results in the most marked cases of chlorosis are obtained by the administration of heroic doses far in excess of what is actually required in blood formation, and much more also than is actually absorbed.

Next to iron, and in some forms of anæmia to be preferred to it, is *arsenic*. This metal is a powerful hæmatinic. It acts on the tissues as well as on the blood and blood-forming organs; and its effect upon the cutaneous epithelium has been actually demonstrated. It is almost the only drug which has been successful in the treatment of severe idiopathic anæmia—which more often resists all medication. The patient under Dr. Cayley's care, where the anæmia was most profound and the corpuscles had fallen to a little less than one-half the normal, notably improved under arseniate of iron. A case was recently recorded from St. Mary's Hospital under the care of Dr. Broadbent, which is a good illustration of the efficacy of arsenic. A woman, forty-two years of age, who had been progressively anæmic for about four months, and was in an extreme condition when admitted (estimated number of corpuscles two days later being 560,000 per cubic millimetre, or 11·2 per cent.), was placed upon liquor arsenicalis with digitalis. The dose of the liquor was increased from two to four minims, and was administered six times daily. In two months time the number of corpuscles had increased to 64 per cent. In the remarks appended to the report of the case it is held "that there can be little doubt that it was one of essential or pernicious anæmia; the patient had the appearance characteristic of this disease, and the sub-febrile temperature; while the red corpuscles of the blood were not only reduced in number to an unusual degree, but deformed. Whether this diagnosis be accepted or not, the failure of iron to do good, and the rapid improvement during the administration of arsenic, are remarkable. In little more than two months the patient passed from extreme anæmia to apparently perfect health, with wonderfully good colour of the cheeks and mucous membranes, and she continued well and strong for some months after leaving the hospital, up to the time when she ceased to present herself for examination." Such cases as this speak strongly in favour of the value of arsenic. I have sometimes prescribed it in simple anæmia with good result, but as a rule one prefers the use of iron, which acts more promptly and fully. Phosphorus has been sometimes administered with success in essential anæmia; as, for example, by Dr. Broadbent in a case where iron had failed; but it has on the whole but few, if any, advantages over arsenic, and its long-continued administration is to be deprecated.—*Lancet*, April 30, 1881, p. 689.

76.—USE OF NITRO-GLYCERINE IN BRIGHT'S DISEASE,  
AND IN THE VASCULAR TENSION OF THE AGED.

By A. W. MAYO ROBSON, Esq., F.R.C.S., Demonstrator of  
Anatomy at the Leeds School of Medicine.

During the last year, I have tried the above remedy, with great benefit, in a number of cases of chronic Bright's disease; and of others accompanied by that condition of the vessels which was described by Sir W. Gull and Dr. Sutton. From the relief obtained in these instances of vascular tension, I was led to try it in acute nephritis, and, as the sequel will show, with very beneficial results. The following condensed jottings will, perhaps, serve to illustrate the pith of my remarks.

*Case 1.*—A. M., aged 56, had been suffering from chronic renal disease for two years. When I saw him, twelve months ago, he had a pale pasty appearance; his eyelids were puffy, and his legs œdematous; his pulse was tense and corded, the walls of the vessels being much thickened; the heart was greatly hypertrophied, and his breathing was at times most laboured and difficult, but at others comparatively tranquil. The urine, of which only a pint and a half was passed in the twenty-four hours, had a specific gravity of 1008, and contained much albumen. A one per cent. solution of nitro-glycerine was at first given in one-minim doses every half-hour, till its physiological effects were produced, in order to relieve the asthmatic symptoms, which it did so effectually that my patient would never be without it. After taking his medicine, in three-minim doses, thrice daily for a week, he drew my attention to his urine, which, he said, came remarkably freely. I had it passed into one vessel for twenty-four hours, and found the specific gravity to be 1012, and the quantity three pints; moreover, it contained very little albumen. He took the remedy regularly for some months; after which time, the pulse had become softer and more regular, the hypertrophied heart seemed to be much quieted, and a mitral regurgitant murmur, “evidently due to dilatation,” had disappeared; the breathing was quite easy and normal, except during exertion. The urine was examined from time to time, and continued abundant and of fair specific gravity, with an absence of albumen and casts. After some weeks, he felt so well, that he discontinued his medicine; but, finding his old symptoms returning, he had again to resort to the remedy, with the same good results.

*Case 2.*—Mrs. E., aged 45, a pale pasty-looking woman, consulted me for dizziness, shortness of breath, palpitation of heart, sickness, œdema of legs, puffiness of face, and general ill health. She said her mother and grandmother had died of kidney-disease, and that she was evidently suffering from the



same affection. I found that she was only passing 150 grains of nitrogen by the urine in twenty-four hours, and that there was considerable vascular tension. I ordered milk-diet, diaphoretics, diuretics, aperients, iron, etc., at various intervals, but without much improvement, so that she began to despair, and consider herself doomed. On taking the solution in minim doses every four hours, she began at once to pass more urine, and the nitrogen increased to 230 grains in twenty-four hours. Her other symptoms also improved. After a few days of this treatment, I ordered 20 minims of tincture of sesquichloride of iron, and one minim of nitro-glycerine solution, thrice daily; in a fortnight, the change was really wonderful; the vascular tension had subsided, the œdema had disappeared; and, all her symptoms being relieved, she felt able to go to the sea-side for change of air.

The following case is interesting, because my patient had one attack of apoplexy, and apparently staved off another by resorting to nitro-glycerine.

*Case 3.*—Mrs. F., aged 52, consulted me in June, saying she had lately been suffering from attacks of dizziness; and that two days before seeing me, she had had an usually severe seizure, which had left her right side weak, and had rendered her speech indistinct. I found the right side of the face and right arm slightly paralyzed, and the right leg numbed and decidedly weak; her speech was also rather indistinct. Her pulse was hard and corded, and all her vessels indicated increase of tension. The urine was normal in quantity, but had a specific gravity of 1006, and showed a trace of albumen. I ordered milk-diet and aperient medicine, and advised rest; the paralysis gradually passed off, but the vascular tension remained. In August, she began to take the nitro-glycerine solution in minim doses, thrice daily, as the attacks of dizziness were returning; the vascular tension was at once reduced, and the pulse became softer and apparently fuller; the urine, which just before the treatment had a specific gravity of 1008, increased afterwards to 1012, and became slightly more abundant. Her dizziness was relieved; but, when an attack threatened, a dose of the remedy always prevented it. Thus, I hope that, by careful dieting, taking an occasional aperient, and keeping down excessive vascular tension by nitro-glycerine, we may be able to postpone in this patient what, perhaps, may be inevitable in the long run, viz., another attack of apoplexy.

May it not be advisable, when one is called to a case of apoplexy, to at once give a dose of this potent remedy, and by lessening the pressure in the vessels, to prevent further effusion? Would this not be better than trusting to aperients or depletion

by other methods, which occupy a much longer time before they act, and then are not always certain in their action?

*Case 4.*—Mrs. C., aged 50, consulted me for severe anginiform attacks and asthma, from which she had suffered for two years. I found that there was no valvular disease of the heart, but some hypertrophy; the pulse, however, was hard and tense, feeling like a piece of whipcord; and, when emptied, the walls were found to be greatly thickened. The urine, being normal, had not attracted the patient's notice; but on examination, I found the specific gravity to be 1005, there being no albumen. I ordered the glonoine solution in minim-doses, thrice daily; and two minims when the pain threatened. She saw me in a week, and expressed herself as feeling much better; and, a fortnight afterwards, said she felt quite well, being entirely relieved from the pain, and quite cured of the asthma. I found the pulse softer and more compressible; and the urine, which was still abundant, had a specific gravity of 1012. I advised her to continue the remedy for some time, so as to keep up the happy state of affairs. Two months subsequently, she still remained well, having only occasionally to resort to the nitro-glycerine.

In the following cases of acute nephritis, the action of the drug in question seems to have been really very remarkable.

*Case 5.*—Mr. C., aged 30, a strong healthy man, consulted me on account of sciatica, for which I prescribed. A few days afterwards, as he was not much better, a friend advised him to try a hot alkaline bath, which he did in the morning. He went out afterwards, and stood for some time in a cold and draughty place of business. At night, he shivered, and was seized with a dull aching in the loins; his urine became scanty and thick, and he had to get up very frequently to micturate. The next day I was sent for, and found him suffering from acute nephritis. He was only passing one pint of urine in the twenty-four hours, which was thick and smoky, and had a specific gravity of 1020. Under the microscope, the sediment was found to be composed of blood-casts, renal epithelium, blood-corpuscles, and lithates: on boiling, it almost became solid. I ordered milk-diet, free diluent drinks, diaphoretics, alkalies, etc., and kept him in bed; but, on the twentieth day, there being no improvement, I began with a minim of the glycerine solution every four hours, which soon produced great throbbing in the head. This treatment was begun on Saturday night, the urine passed during the previous twenty-four hours was one pint, which had a specific gravity of 1020, and was loaded with blood. On the Sunday, the amount of urine for twenty-four hours was a pint and three-quarters; it had a specific gravity 1020, and contained much less blood



and far less albumen. On Monday, there were two pints and a half passed in the twenty-four hours; the blood had quite disappeared, and there was only a cloud of albumen on heating; the specific gravity was 1025. On the Saturday following—*i. e.*, one week after beginning the new treatment—the urine was normal in quantity and quality, and the patient was feeling well, but weak. No relapse has occurred, and my patient is now perfectly well, six months after his attack.

*Case 6.*—Mr. R., aged 39, had been suffering from dyspepsia for some weeks; but a fortnight at the seaside restored him completely. The day after returning home, he had to hurry to catch a train, and got into a violent perspiration, when he had to wait some time in a draughty station, and felt a chill come over him. The next day I was summoned, and found him complaining of an aching in the loins and frequent micturition. He was slightly feverish, and had puffy eyelids; but what alarmed him most was the condition of his urine, which was scanty, and of the colour of coffee. I ordered rest in bed, milk-diet, diluent drinks, poultices to loins, diaphoretics, &c., for three days, without any improvement; the urine then being loaded with blood, and only a pint and a quarter being passed in twenty-four hours. I ordered one minim of one per cent. solution of nitro-glycerine every four hours. In twenty-four hours, the blood entirely disappeared from the urine; and during the following twenty-four hours the urine was passed into one utensil, and found to measure three pints; it then had a specific gravity of 1019. On the sixth day, he felt well; and, as he had some pressing business on hand, he went out, and left off his medicine. He said he caught more cold, and found the urine dark again; but he resorted to his old remedy, and it soon cleared up. He went into the country a week afterwards, and returned to business in good health after a fortnight's rest.

The following case has been kindly furnished by Mr. William Hall.

*Case 7.*—Mrs. C., aged 65, was attended in January 1879, when she was suffering from bronchitis and albuminous urine. In April 1880, she complained of sickness, had a furred tongue, and temperature  $101^{\circ}$ . The urine was smoky, and contained blood-corpuscles, much renal epithelium, and small casts; the pulse was tense, but not frequent. She was ordered steam-blankets, and liquor ammoniæ acetatis, and was kept on milk-diet; after a fortnight, there being no improvement, a minim of glonoine solution was ordered to be taken every three hours, and was increased in twenty-four hours to a minim and a half. In two days, the urine became much more abundant, and paler;

contained few blood-discs and casts, with very little albumen. At the end of six days, the nitro-glycerine was omitted by mistake, and liquor ammoniæ acetatis given. The urine, next day, contained blood and casts, and assumed a smoky appearance. After three days' interval, the glonoine was resumed, and an improvement in the character of the urine at once resulted. This improvement continued, under the use of the remedy, until the blood and casts had disappeared, only a trace of albumen remaining.

I have not had a chance of trying nitro-glycerine in the acute nephritis of scarlet fever, or in suppression of urine, but intend giving it a trial. I hope, on a future occasion, to relate cases in which the anomalous symptoms of old age, neuralgia, &c., accompanied by arterial tension, have been benefited by the remedy in question.

I must leave my cases to speak for themselves: I report them, in order that I may elicit the opinion of others, and perhaps induce someone to try this remedy in acute nephritis, or in the numerous and often distressing symptoms which apparently have their origin in that state known as vascular tension. Whether it be due to chronic kidney mischief, or to arterial fibrosis, this condition is unquestionably relieved by nitro-glycerine, and, with the diminution of pressure, in my experience, improvement inevitably follows, though, in some cases, it may only be temporary.—*Brit. Med. Journal*, Nov. 20, p. 803.

---

#### 77.—THE SALICYLATES OF SODA AND OTHER BASES.

By Dr. PROSSER JAMES, Physician to the Hospital for Diseases of the Throat and Chest, &c.

Prof. Charteris seems to have abandoned salicylate of soda after a single trial; but the cases reported in the *Journal* of Jan. 29 show that it is being freely used in hospital practice. Perhaps the early introduction of this salt, and its ready solubility, as well as its sweetish taste, have combined to make it the favourite. I should, however, be glad to introduce to the profession some others which are deserving of their attention. In acute rheumatism, salicin seems likely to maintain its pre-eminence, because in this disease it is necessary to bring the patient rapidly under the influence of the remedy. This can only be accomplished by full doses at frequent intervals; and salicin seems to be more readily tolerated than salicylic acid or the salicylates; indeed, very disagreeable, not to say dangerous, symptoms arise with these salts, as testified by Dr. Charteris and many others. Where, however, it is not necessary to saturate the system quickly with the drug, no such disagreeable



effects will occur, and the salicylates of soda and other bases deserve a more extensive trial. All produce similar effects, so far as the acid is concerned, each giving rise to variations due to its respective base.

*Salicylate of Ammonia*.—When it is merely desired to obtain a freely soluble and diffusible combination of salicylic acid ammonia may be substituted for soda, and the salt thus obtained administered in corresponding quantities; the only differences in the effects being due to the change of base.

*Salicylate of Potash* may be first named as a substitute for the soda salt; it is similar in taste, very soluble, and may be administered in the same manner, either in single massive doses, or in smaller quantities at frequent intervals. About three years ago, I took two ounces of it, in doses of half a teaspoonful to a teaspoonful once a day. I have also taken smaller doses more frequently, the effects being precisely similar to those produced by the soda salt. Salicylate of potash is to be preferred whenever it is desirable to introduce potash into the system rather than soda. This is often the case in the gouty diathesis, in some forms of dyspepsia, in the various manifestations of lithiasis, and in some other conditions.

*Salicylate of Lithia* is the next preparation I would introduce. It is not so easily made; or, at any rate, my early experiment. in small quantities were not very satisfactory. I therefore asked Messrs. Blake, Sandford, and Blake, to make some. At first, the slightest variations in the process gave rise to an unexpected variety in the product; but now a salicylate of lithia of uniform appearance and quality may be obtained. I recommend it in preference to either the soda or the potash salt when it is desirable to administer a salicylate to gouty patients, or to persons suffering from the presence of uric acid. In fact, where lithia is indicated, it may be given in this form, provided it is desirable to give the salicylic acid, which latter may, in other cases, be given at the same time that lithia in some other form is being taken; as, *e.g.*, during a course of lithia water.

*Salicylate of Lime*.—In consequence of the affinity of salicylic acid for lime the teeth may be acted on, and a mistrust has been expressed lest even the bones might suffer from a long continuance of the remedy. To meet such an objection the hypothesis may be ventured that this salt would best shield the osseous system.

*Salicylate of Quinia*.—This salt has also been used with considerable success, particularly in those cases in which the effects of the bases already mentioned are not required, and in which a tonic, rather than a depressant, effect is desired; in fact, in

those cases in which the two components of the drug are both indicated. In such cases, I have administered quinine and salicylic acid alternately; but the salicylate of quinia offers a more simple and elegant mode of prescribing, and has been well spoken of by Dr. Hewan in neuralgia and rheumatic pains.

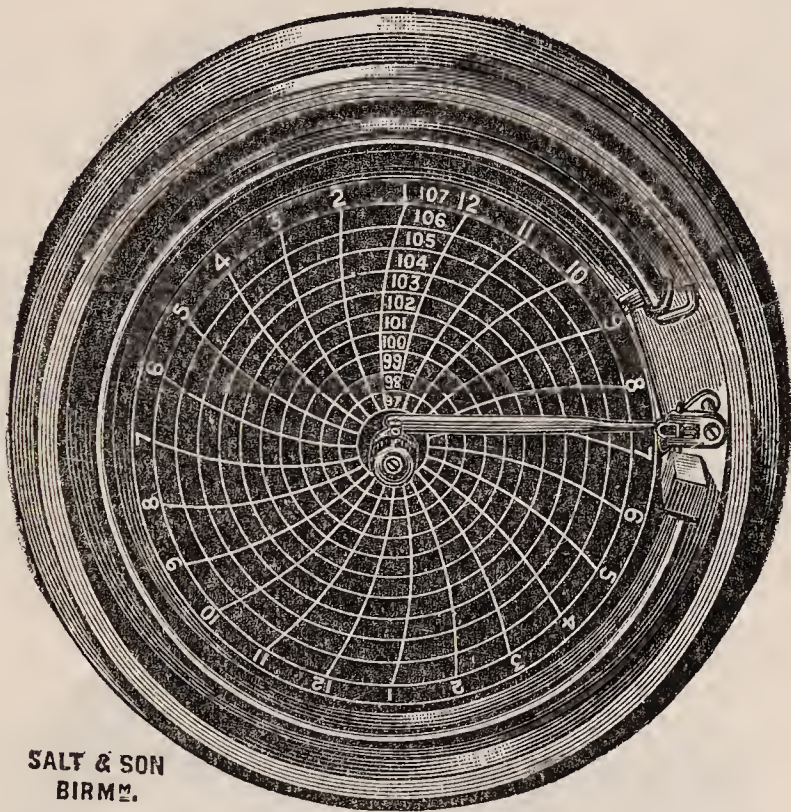
*Salicylate of Cinchonidia.*—I now introduce this salt as a less costly substitute for that of quinia, and very useful as a tonic and antiperiodic in neuralgia, rheumatism, sciatica, etc. In such cases, five grains may be given every two hours, or ten grains may be given at once, and afterwards three or four doses of five grains at intervals of two or three hours. Cinchonidia ( $C_{20}H_{24}N_2O$ ) is an isomer of cinchonia, but possesses left instead of right polarisation, and is rather more soluble. The medical committee which investigated the subject for the Government of India estimated that cinchonidia is only slightly less efficacious than quinia in fever; many observers have considered it of equal value in neuralgia. It might, therefore, be expected, that a combination of this alkaloid with salicylic acid would prove valuable in various nervous and rheumatic affections. The salicylate contains about a third of its weight of the acid, and is, of course, incompatible with iron. It is rather insoluble, and therefore the bitter taste is not quickly perceived; it may be given as a powder in wafer-paper or in a pill; or it may be suspended in a liquid, though this is not an agreeable method of taking it. I give the solid drug in the form of Wyeth's compressed tablets, which can be swallowed quickly like pills. They are sufficiently insoluble not to be tasted in this way, but they readily disintegrate in the stomach; for I have known a couple of tablets produce, in a short time, singing in the ears, which could not be distinguished from the effect of quinine by a patient who had often taken that drug. A patient who suffered acutely with neuralgia of the fifth nerve, which had been arrested twice by gelseminum, took for the third attack, two tablets, repeating the dose in an hour; this sufficed. I have given it in pleurodynia and in the pains of chronic rheumatism. I have not yet tried it in acute rheumatism; but so many cases in which salicylate of soda is being employed would apparently do better if the effect of quinia in the system were substituted for that of soda, that we may hope the salicylate of cinchonidia may obtain a fair trial. Still, it is in more chronic cases of nervous and rheumatic pain, and perhaps in some of the consequences of malaria, that the chief use of this salt will probably be found. As a stimulant to appetite, and general tonic, it may also be given in moderate doses for a longer period, say two and a half to five grains twice or three times a day.—*British Medical Journal*, March 19, 1881, p. 428.



## 78.—DESCRIPTION OF A NEW CLINICAL THERMOGRAPH.

Invented by W. D. BOWKETT, Esq., Medical Officer  
of the Leeds Fever Hospital.

This instrument, of which an engraving is given (Fig. 1), is the invention of Mr. Bowkett, of the Leeds Fever Hospital, who has bestowed much time and labour on its perfection, ably assisted latterly by Messrs. Salt and Son, of Birmingham, in whose hands it is now placed.



The principle involved in its construction is that of applying the pressure resulting from the expansion of a liquid in a closed chamber, under varying temperatures, for the purpose of recording these variations. The expansion produced in a given liquid by an increase of temperature is proportionate to that increase, and if its free expansion be restrained the resulting pressure is also proportionate.

The thermal portion of the instrument consists of a metallic vessel, rigid and unyielding, about three inches in diameter, and one-third of an inch in thickness. In connection with this is a curved hollow tube or spring (seen towards the outer edge of the engraving), much smaller in size, but similar to that used in the Bourdon steam gauge. One end of this tube is fixed to the vessel, with the chamber of which it communicates; the other extremity is closed, and is in connection with a simple lever movement, increasing a first motion some three



or four times. The whole is filled with liquid and hermetically sealed. Now any increase of temperature causes the contained liquid to expand. The vessel being unyielding, the expansive force influences the tube only, whose form renders it elastic, in such a manner as to cause the end in connection with the lever to recede from its position of rest, and the lever is thus moved upon the recording surface.

The recording surface consists of a dial or disc of card-board, set in motion by watch-work occupying the centre of the instrument.

The dial makes one revolution in 24 hours and is divided by concentric circles into degrees, and by 24 radial lines into as many hours. The movement of the lever is from the centre towards the circumference; its extremity is armed with an arrangement for marking a legible ink line on the disc upon which it lightly bears, so that during its revolution a line is drawn whose position in reference to the concentric circles marks the temperatures, and in reference to the radial lines the times of those temperatures.

The lever permits of being lifted to allow of the disc being changed. The flat under-surface is applied to the body, the other portions being protected from injury by a suitable vulcanite case. (Fig. 2).



It is usually applied to the abdomen, being held *in situ* by a broad band of non-conducting material, which also serves to



protect the instrument and the skin from being unduly influenced by external temperature variations.

Being filled with a comparatively incompressible liquid, it is not to an appreciable extent affected by barometrical changes.

Worn in the manner described it produces but trifling discomfort, and requires no constraint of position or movement.

A facsimile is here given (Fig. 3.) of a continuous record from a case of phthisis.



The abdomen is selected for its application on account of the ease with which it may be there worn. Necessarily the closure of the axilla for 24 hours would be fraught with extreme discomfort, even in health, while in many cases of sickness, the constraint of its closure would be unbearable. The record given by the abdomen while not always absolutely agreeing with the axillary temperature is yet sufficiently accurate for all practical purposes.

If, however, for purposes of research, &c., perfectly accurate records be required, it will be essential either that the instrument be worn in the axilla, or, if on the abdomen, that the hand be fastened over, thus surrounding it by the tissues. The latter plan is by far the more comfortable.

It may be repeated, however, that these precautions are only requisite where great exactness is desired, and that for the detection of abnormal temperatures or abnormal variations the simple application by the broad band is sufficient.

It will be seen that its construction admits of much variation of design in size and shape. The range usually given it is from 97 to 107 degrees, but by varying the liquid with which it is filled, or the relative capacity between the tube and the chamber, the size of the degrees and the resulting delicacy or range may be increased or decreased at pleasure.

—Communicated.

## 79.—LIQUOR FERRI HYPOPHOSPHITIS COMPOSITUS.

THE HYPOPHOSPHITES (IRON, SODA, LIME, AND MAGNESIA) COMBINED  
SOLUBLE TONIC FOR CHILDREN, ETC.

By Dr. FREDERICK CHURCHILL, F.R.C.S., Surgeon to the  
Victoria Hospital for Children, &c.

With the exception perhaps of cod-liver oil, no remedy has of late years been so largely used as "chemical food." Dr. Parrish of Philadelphia first introduced this preparation in the form of a syrup, and it is generally made in this country according to his well-known formula. I have used it both in private and in hospital practice with a certain amount of success; but we know that phosphates in the form of tricalcic phosphate (which is the base of Parrish's preparation) are only assimilable when the digestive functions are in order, and then only to a very limited extent. Moreover, the continued administration of large quantities of sugar is not conducive to the ordinary degree of gastric perfection. The phosphates at all times, from their very intractable nature, must undergo considerable metamorphosis under the action of the gastric juice before being converted into assimilable lactates. It has occurred to me that we might succeed in making a preparation somewhat similar in composition and properties, but which would be an actual solution of the salts of the hypophosphites, prepared according to a definite process of chemical manipulation, *instead of being merely a suspension of salts in syrup*, and having phosphorus in a higher and more active state of combination.

The delicate salts denominated *hypophosphites* have been employed separately and with success by medical men of eminence in cases to which I will presently allude. The term *hypo*, meaning less or a deficiency of oxygen, has led many to infer that on this account the therapeutic effect would be less marked than in cases where the phosphates are employed. Moreover, preparations of the hypophosphites have not been favourably received by the profession, on account of the very empirical way in which they have been flaunted before the eyes of the public, and the unwarrantably sanguine expectations concerning their therapeutic value. Notwithstanding such objections, I find that authentic preparations of the hypophosphites are now articles of manufacture for which there is a constant and increasing demand.

Hypothetically convinced of the superiority of these salts as compared with the phosphates, I endeavoured to obtain the most important of them in a compound form which should be palatable and yet practically free from sugar. With the assistance of the Pharmacist to the Victoria Hospital for Children, I obtained a preparation "meeting my expectations in every way—a permanent palatable solution suitable for children of all



ages, capable of being given either alone or in combination with a light wine. I herewith subjoin a formula giving the percentage composition :—

	Grs. in 100 Minims.
Ferrous Hypophosphite ( $\text{Fe } 2\text{PH}_2 \text{ O}_2 + 6\text{H}_2 \text{ O}$ )	.. 2.77
Calcium Hypophosphite ( $\text{Ca } 2\text{PH}_2 \text{ O}_2$ )	.. 3.5
Sodium Hypophosphite ( $\text{Na } \text{PH}_2 \text{ O}_2 + \text{H}_2 \text{ O}$ )	.. 3.5
Magnesium Hypophosphite ( $\text{Mg } 2\text{PH}_2 \text{ O}_2 + 6\text{H}_2 \text{ O}$ )	1.99
Hypophosphorous Acid ( $\text{H}_3 \text{ PO}_2$ )	.. .. 1.66
Water .. .. .	.. .. 86.58
	<hr/> 100.00

One fluid drachm is equal to—ferrous hypophosphite 1.6, calcium hypophosphite 2, sodium hypophosphite 2, magnesium hypophosphite 1.1; or 6.7 grs. of the mixed salts. This liquor, associated with British raisin wine or Hungarian Carlowitz, as supplied by Max Greger, in the proportion of one of the liquor to three of the wine, may be given in half-ounce doses to children about ten years of age. It contains, according to the above formula, 6.7 grains. I prefer giving the solution in about ten-drop doses to young children. Carlowitz as a vehicle is more suitable for adults; its value being enhanced by the fact that it contains naturally two *permille* of iron phosphate. It is therefore best adapted as a vehicle for the administration of the liquor when given as a nervine tonic in general debility, especially in cases of exhaustion from excessive strain upon the nervous system. Raisin wine is very suitable for young children. It contains just sufficient grape-sugar to favour the assimilation of the hypophosphites and to retain them in solution. It is also much cheaper, and this is of importance in hospital practice. Several other wines were experimented on during the search for a suitable menstruum. Those above mentioned were chosen as being least antagonistic to the hypophosphites, chiefly on account of the small percentage of ethylic alcohol. I find that the hypophosphites will not remain in solution when alcohol is in excess. The fact of the wines chosen being poor in alcohol is, I think, an additional recommendation.

I have purposely omitted potash from my formula for several reasons, and have given prominence to lime and soda because these two bodies exist largely in human milk as phosphates. They are also present to a considerable extent in the albuminous and fibrinous elements of the blood and in the blood-corpuscles; and also in the secretory fluids.

Prof. Church, in his recent lectures on the Chemistry of Foods, at South Kensington, says: "It is important to remember that the mineral constituents of milk are rich in phosphates. Besides the phosphates of lime and magnesia, there is also phosphate of

iron, which supplies most of the iron contained in food, and the whole of that required by infants.”

Magnesium hypophosphite is used instead of potash, because it is an element of vital importance in the ossification of young cartilage, and is also an important factor in the constitution of the secretory fluids. In the therapeutic application of these salts—viz., the hypophosphites—iron has not hitherto been given that prominence which its obvious importance demands. It appears to have been thought by some that the alkaline and earthy hypophosphites are superior to any ordinary hæmatogens. In my formula for the compound liquor, iron is one of the most important constituents. We find that iron exists as phosphate in the blood to the extent of  $\cdot 189$  per *mille* of the albuminous portion, and  $1\cdot354$  per *mille* of the blood-corpuscles (Jolly, *Comptes Rendus*, vol. lxxxviii. 756-759.

I ascribe much of the benefit resulting from the use of this preparation to the presence of ferric hypophosphite, and particularly in that large class of cases constantly to be found in hospital practice, where, from poverty of blood and wasting diseases, anæmia is the one prominent symptom. I am permitted to say that my colleagues at the hospital and other medical friends who have made use of this preparation have found it a valuable remedy. It is much to be preferred to that unsatisfactory and imperfect preparation called steel wine. In cases of rickets, its effects are very marked in the gradual solidification of the bones. I have employed it thus as a substitute for chemical food in several hundred trials, extending over a period of nearly two years.

I might have cited at length some of the typical cases benefited by this method of treatment, and have given relative weights both before and after treatment, but I prefer to await the verdict of my professional brethren giving the result of more matured and unbiassed observations.

The hypophosphite of potash was not experimented on for many reasons. Dr. Thorowgood had found it far too energetic in its action to admit of my including it in a remedy intended as an agreeable dietetic for feeble children. Dr. Thorowgood considered that great mischief had resulted from the incautious administration of this drug to persons affected with tubercular disease of the lung. As a gradual tonic and restorer of failing nerve-force, he prefers the hypophosphite of soda or of lime; and either of these he considers will answer the purpose better than the administration of pure phosphorus internally. Mr. Taylor says that the soda hypophosphite is best adapted for blood-disorders; those of potash, lime, and ammonia for diseases of structure and of the secretory organs; these being the most soluble of all the oxides of phosphorus, they are conse-



quently at once admitted into the circulation. The chemical change after absorption has not yet been determined. My impression is, that the salts become deoxidised, being converted in part into phosphates and leaving a residue of phosphorus and the basic salts. There is no doubt that we have in this preparation all the therapeutic properties of phosphorus, without the danger attending the administration of crude phosphorus.

One of my colleagues, Dr. Venn, has found the soda hypophosphite efficacious in chronic bronchitis. It seems to promote free expectoration of tenacious mucus. He generally combines with it the soda carbonate, spirit of ether, and glycerine.

Dr. Thorowgood says that, in cases of serious depression and torpor, with occasional shooting neuralgic pains, and where there are numbness and deadness of the limbs arising from feeble circulation, the salts of the hypophosphites are useful. Where anæmia is present, he recommends the addition of the citrate of iron, or of the syrup of the hypophosphite of iron. The compound wine, prepared according to the formula I have suggested, has been found particularly useful in these cases of paresis and what is called "creeping paralysis."

Dr. Hayes Jackson relates how he recovered from a severe attack of neuralgia in the back and thigh of six months' duration by taking drachm doses of soda hypophosphite in beef-tea thrice daily. In the remittent fevers of childhood, Dr. Purdon employed the hypophosphites with marked success. They seem to fulfil, he says, all the required indications in causing sleep, relieving thirst, cleansing the tongue, increasing the appetite, and arresting any resisting intestinal disorder, in a much shorter time than can be obtained by any other remedies.

The following formula is suitable for an infant, the dose being increased according to age.  $\mathcal{R}$  Sodæ hypophosphitis, gr. vi.; calcis hypophosph., potassæ hypophosph., āā gr. iv.; glycerini, ʒ ij; aquæ, ʒ j. Dose, forty minims thrice daily in a little water.

This mixture would have to be made up when required, as the hypophosphites deposit after a time when suspended in glycerine. The compound liquor, prepared according to my formula, is nearly five times the strength of the above, and consequently admits of a large dose being given in a small bulk. It contains a better selection of salts, and is much enhanced in value as a general tonic by reason of containing the hypo-salt of iron. It is, moreover, a stable solution; and, with the exception of a slight chalybeate flavour, may be said to be tasteless. A few drops on a lump of sugar, dissolved in the mouth, are agreeable and refreshing. It may be administered in milk or beef-tea unknown to the patient.

In *tabes mesenterica*, Dr. Purdon has found that the hypophosphites act slowly, but surely. He considers that they act by dissolving the tuberculous matter deposited in the folds of the mesentery and mesenteric glands, possibly by causing disintegration of the fibrine.

Dr. Thorowgood employed the hypophosphites in two cases of psoriasis with marked benefit. At the Victoria Hospital, the compound wine has been employed in similar cases as a tonic and alterative, the local disease being overcome by the use of chrysophanic acid ointment. In debility resulting from prolonged lactation, in some forms of dyspepsia, in anæmia, and leucorrhœal discharges, in leucocythæmia, in myalgia, and in muscular pains simulating inflammation, Mr. Taylor has used the hypophosphites with considerable benefit.

The compound wine of the hypophosphites has proved valuable as a dietetic in repairing the waste brought about by neglect, improper food, and other well-known conditions antagonistic to health. It has also given vigour and strength to nursing mothers, imparting the necessary elements to their milk for the production of bone and sinew; besides preventing, in many cases, that draining of the system brought about by the after-effects of epidemics, bad feeding, and ill-ventilated dwellings. A very common factor in the primary causation of diseases of young life is the prevailing ignorance of mothers in bringing up "by hand." Partly from ignorance and partly from enforced poverty, mothers will endeavour to keep their children alive on bread-sop, because unable to afford them a sufficiency of cow's milk.

The importance of carefully checking any tendency to excessive lactation will be seen at once if we but roughly calculate the still large proportion of infants brought up on breast-milk. The early months of a child's life are the most critical. All its future wellbeing depends upon careful nursing and proper nourishment. If skilful analytical examination of dairy-milk be needful, all mothers prolonging the lactation period for eighteen months or two years might with advantage be compelled to submit to qualitative analysis of their breast-milk. Indeed at all times such analysis would prove a powerful factor in enabling the physician to trace the origin of many diseases common to young life. Is it too much to ask that some method be found of unyoking the necks of these heavily burdened mothers? As with vaccination, so with lactation, let the parents be compelled to consider the interests of their children as paramount to their own convenience. To neglect all hygienic principles is only to foster disease, which saps the foundation of young life, and darkens the pages of our national history by swelling the lists of the incurable and insane.



For the administration of phosphorus, there is not, I am certain, a more efficient or safer medium than the hypophosphites.

Sodic hypophosphite contains 29·3 per cent. of phosphorus in an assimilable form, whereas trisodic phosphate contains only 7·9 per cent. of phosphorus in a probably inert state. Calcic hypophosphite contains 21·3 per cent. of available phosphorus. Tricalcic phosphate contains 20 per cent., of which little can be available. This in itself is sufficient evidence to warrant the conclusion as to the superior therapeutic value of the combined hypophosphites.—*British Medical Journal*, March 27, 1880.

---

#### 80.—ON INGLUVIN.

By Dr. G. H. R. DABBS, Shanklin, Isle of Wight.

This preparation, much lauded by American authors for its power of arresting the vomiting of pregnancy, deserves, so far as I have been able to judge from a careful and constant use of it in many dyspeptic cases, a very much wider trial than has yet been accorded it. In the vomiting of pregnancy, it has seemed to me, given before meals in doses gradually increased from five grains to a scruple, to act more especially well in those cases in which a certain degree of anæmia was present. My experience has been that, where marked plethora exists, or a full habit of body obtains, the effect of ingluvin is very uncertain, and is not maintained after the drug is withdrawn or the dose lessened. But for the anæmic, and particularly in first pregnancies, it may be said to act now and then like a charm.

I do not myself find that the best way to give it is before *each* meal, or that it is necessary that it should be taken three times a day. I believe the following to be the best method to adopt. As early as possible—say 5 a.m. or 6 a.m.—a commencing dose (ten grains) is given in water; at 8 a.m. or 9 a.m., fifteen grains more are given; and an hour after this second dose a breakfast of iced soda-water and milk with dry toast is taken. That finishes the day's drug-taking. On the second morning, fifteen grains are given very early, and twenty grains three or four hours subsequently (again before food); and on the third day, two twenty-grain doses at the same hours. I then drop the dose—for by this time (as, in my experience, the drug acts quickly) the vomiting will have lessened—to ten grains before each meal for three more days; and I then stop the administration of the powder altogether. But I believe that the dyspepsia of phthisical patients is more uniformly affected by this drug than by any other remedy. I speak of the forms of dyspepsia in the phthisical in which these two symptoms are the most promin-

ent, viz., epigastric pain and flatulence. It must be in the experience of most medical men how annoyingly, over and over again, the putting on of flesh is arrested by periods of dyspepsia; and it is precisely in these cases I believe that, if the following treatment be adopted, the least loss of strength and flesh possible will be entailed. With the onset of a dyspeptic attack, in the course of a case of threatened phthisis, it is often necessary to cease cod-liver oil, iron, quinine, and tonics; they cannot be digested. Now if, *before* each meal, a dose of Dr. Larmande's tonic glycerine be given, (the formula for which will be found in *Retrospect*, vol. 82, p. lxxix.) and if, *after* each meal, simple doses of ingluvin be administered, I believe the duration of the attack will be markedly cut short, when compared with the duration of similar attacks under treatment by acid and pepsine, bismuth, or even lacto-peptine. The use of ingluvin would seem to be limited to cases in which diarrhœa is absent—at all events, in phthisical patients.

I have also tried ingluvin in cases of dyspepsia which are not purely of the atonic type, among patients who are not the subjects of phthisical treatment; but, as a general rule, I find that the more nearly the symptoms tally with atonic dyspepsia (by this I mean weight and tension during digestion, flatulence, feebleness of pulse, and constipation), the more satisfactory is the ingluvin treatment. It may be urged, and with reason, that the practical effect of the administration of ingluvin for the vomiting of pregnancy, in the manner in which I prefer to give it, is to starve the patient early in the day; and it may be doubtful whether any treatment would not be equally successful which involved this principle. To this I would reply that, in my experience, the treatment of the vomiting of pregnancy by deferring any great or substantial meal until midday has not been a successful practice; and I have found that the vomiting need not be limited at all to the early morning, but may continue till, or recur at, any subsequent hour of the day; and that I have experienced too great satisfaction from the ingluvin treatment to doubt that *post hoc* is *propter hoc*.

Finally, I would rather not extend my very marked preference for ingluvin over all other remedies to those cases in which nausea without vomiting is a symptom, but to those only in which vomiting absolutely takes place. There are cases in which nausea all day long takes the place of morning sickness; these will not yield the satisfactory results from ingluvin which I have mentioned. But let me not be understood to mean that the vomiting which ingluvin aborts will result in a profound nausea in which it is powerless.—*Brit. Med. Jour.*, Jan. 15, 1881, p. 86.



# INDEX TO VOL. LXXXIII.

	PAGE.
Abnormal growths, Dr. Richardson on subcutaneous injection of sodium ethylate in ... ..	194
Aconite, Dr. Bomford on its use in remittent fever ... ..	26
Acute nephritis, Mr. Robson on the use of nitro-glycerine in ... ..	304
——rheumatism and diabetes, Dr. Latham on some points in ... ..	29
Alcohol, Dr. M'Bride on its action on aural polypi ... ..	242
—— as an anti-spasmodic, Dr. Richardson on ... ..	xxvi
<i>Althaus</i> , Dr. J., on the treatment of tarsal tumours by electrolysis ... ..	123
Amputation of leg, Mr. McGill on salicylic silk as an antiseptic dressing in ... ..	143
Anæmia, Dr. Coupland on the pathology of ... ..	75
—— Dr. Coupland on the treatment of ... ..	301
—— Mr. Tacey on the blood-cells in ... ..	81
Anæsthesia, Dr. Crombie on combined use of morphia and chloroform ... ..	296
Anæsthetic, Dr. Ott on bromide of ethyl as an ... ..	lxxii
Aneurism, Mr. Barwell on the use of the catgut ligature in ... ..	184
—— Mr. Watson on the use of the catgut ligature in ... ..	185
—— of the aorta treated by galvano-puncture, Dr. Ord's case of ... ..	180
Angina pectoris Dr. Balfour on the treatment of paroxysmal ... ..	64
—— Dr. Brunton's observations on ... ..	72
—— Dr. Burrall on nitrite of amyl in ... ..	xxviii
—— Dr. Harris on the pathology of ... ..	69
—— Dr. Moxon on the treatment of ... ..	xxiv
<i>Annandale</i> , Prof. T., on the radical treatment of hernia ... ..	198
Anodyne amyl colloid in neuralgia, sciatica, lumbago, and muscular rheumatism ... ..	xx
Anthrax and anthracæmia in woolsorters, heifers, and sheep, Dr. Bell on ... ..	252
Antidotes for various poisons ... ..	lxxi
Antiseptic dressing, Mr. McGill on salicylic silk as an ... ..	141
—— Mr. Pye on salicylic cotton-wool as an ... ..	144
—— surgery as practised by Prof. Esmarch, Dr. Little on ... ..	124
—— system in ovariectomy, Dr. Bantock on the ... ..	lxvii
—— treatment of empyema, Dr. Ferguson's cases ... ..	96
Aortic aneurism treated by galvano-puncture, Dr. Ord on ... ..	180
Arsenic, Dr. Coupland on its use in anæmia ... ..	303
Asbestos roofing felt for plastic splints, Dr. Eldridge on ... ..	xlvi
Aspirator, Dr. Maclaren on its use in intestinal obstruction ... ..	112
Asthma, Dr. Thompson on drug smoking in ... ..	xxix
—— Dr. Yeo on the treatment of by the induced current ... ..	101
—— Prof. See on the use of ethyl iodide in ... ..	xxix
—— spasmodic, Dr. Burrall on nitrite of amyl in ... ..	xxviii
—— spasmodic, Dr. Richardson on the treatment of ... ..	xxvii
Atropine salicylas in eye affections, Dr. Tichborne on ... ..	lxii
Aural polypi, Dr. M'Bride on instillation of rectified spirits in ... ..	242
—— M. Politzer on the treatment of ... ..	lx

<i>Bulkley</i> , Dr., on the use of sulphur in skin diseases ... ..	lix
<i>Balfour</i> , Dr. G. W., on the treatment of paroxysmal angina pectoris ... ..	62

	PAGE.
<i>Barnes</i> , Dr. R., on the treatment of dysmenorrhœa by retention ...	286
<i>Barwell</i> , Mr. R., on the use of the catgut ligature in aneurism ...	184
<i>Baumler</i> , Dr. C., on diagnosis of the mildest forms of enteric fever ...	17
<i>Bell</i> , Dr. J. H., on anthrax and anthracæmia in woolsorters, heifers, and sheep ...	252
Bloodless operations, Prof. Esmarch's latest modification of ...	xlv
<i>Bomford</i> , Dr. G., on the use of aconite in remittent fever ...	26
<i>Bowel</i> , Dr. Maclaren's enterotomy tube for preventing prolapse of ...	114
——— Dr. Maclaren on the aspirator in obstruction of the ...	112
<i>Bowkett</i> , Mr. W. D., his new patent clinical thermograph... ..	311
Breast, Dr. Gross on the diagnosis of tumours of the ...	284
——— Mr. McGill on salicylic silk dressing after removal of ...	143
Bright's disease, Mr. Robson on nitro-glycerine in ...	304
<i>Bristowe</i> , Dr. J. S., on the treatment of enteric fever ...	19
Bromide of ethyl as an anæsthetic, Dr. Ott on ...	lxxii
Bromohydric acid, Dr. Milner Fothergill on ...	xvii
Bronchocele, or goitre, Dr. Woakes on the treatment of ...	164
<i>Burnet</i> , Dr. R. W., on flatulent distension of the colon ...	108
Button sutures, Dr. Macewen on making and adjusting ...	163
Butyl chloral, Dr. Liebreich on ...	xxi
Caffeine, Dr. Beard on its use in sick headache ...	xvi
<i>Cameron</i> , Dr. C. A., his notes on the pathology of the urine ...	115
<i>Cameron</i> , Dr. H. C., on some medical complications of surgical practice ...	146
Cancer, Mr. Hutchinson on the local origin of ...	41
Carbolic acid in prurigo, M. Lallier on the use of... ..	liii
Cataract, Mr. Power on the after-treatment of ...	228
——— operations, Dr. Loring's operation for new pupil after ...	222
Catarrh of the stomach in children, Dr. Eustace Smith on ...	103
Catgut ligature, Prof. Lister on the ...	127
——— Dr. Macewen on the ...	153
——— in aneurism, Mr. Barwell on the use of ...	184
Cauliflower growth in cervix uteri, use of galvanic cautery in ...	291
Cervix uteri, use of galvanic cautery in malignant disease of ...	291
<i>Chiene</i> , Mr. J., on bladder drainage ...	214
Chlorate of potash in the convulsions and epileptic attacks of children, Dr. Harkin on ...	xv
Chloroform and morphia, Dr. Crombie on combined use for anæsthesia ...	296
——— poisoning, Dr. Burrall on nitrite of amyl as an antidote in ...	xxviii
Chrysophanic acid in ringworm and psoriasis, Dr. Squire on ...	lviii
Croton-chloral and juniper in dysmenorrhœa, Dr. Richardson on ...	lxiv
Choleraic and autumnal diarrhœa, Dr. Shelly's treatment of ...	15
Chromicised catgut ligatures, Prof. Lister on the preparation of ...	135
——— Prof. Lister on the strength of ...	136
——— Prof. Lister on its behaviour in the tissues ...	139
——— Dr. Macewen on ...	154
Chronic lung disease, Dr. Pollock on the pathology of ...	90
<i>Churchill</i> , Dr. F., on the hypophosphites ...	314
Club-foot, Dr. Renton on the treatment of ...	119
Cocculus indicus in the treatment of epilepsy, M. Hambursin on ...	xv
Colon, Dr. Burnet on flatulent distension of the ...	108
Colotomy with the chisel in genu valgum, Mr. Swan on ...	120
Constipation of enteric fever, Dr. Bristowe on the ...	23
Convulsions of children, Dr. Harkin on chlorate of potash in ...	xv
Cough mixture, palatable, bromohydric acid, chloroform, and squills ...	xviii
——— of phthisis, Dr. Landouzy on the arrest of ...	xxxix
<i>Coupland</i> , Dr. S., on the pathology of anæmia ...	75
——— on the treatment of anæmia ...	301
<i>Crombie</i> , Dr. A., on anæsthesia by combined use of morphia and chloroform ...	296
Croton chloral, Dr. Liebreich on its use in tic, pertussis, &c. ...	xxi
——— Dr. Richardson on its use in neuralgia ...	xviii
Croton oil, Dr. Liveing on its use in ringworm ...	260
Cystitis, chronic, Mr. Chiene on the importance of bladder drainage in ...	215



	PAGE.
<i>Dabbs</i> , Dr. G. H. R., on ingluvin	319
Diabetes and acute rheumatism, Dr. Latham on some points in the pathology and treatment of	29
— as a cause of pruritus vulvæ, Dr. Wiltshire on	282
Diabetic urine, Dr. Cameron on the low specific gravity of	116
Diarrhœa of enteric fever, Dr. Bristowe on the	22
Disease, Mr. Bowkett's new thermograph for recording variations of temperature in	311
Drainage of bladder, Mr. Chiene on	214
— of wounds, Dr. Macewen on india-rubber tubes	157
— Dr. Macewen on carbolised catgut	158
— Dr. Macewen on horse-hair	158
— Dr. Macewen on capillary syphon drains	159
— Dr. Macewen on chicken-bone drainage-tubes	160
— tubes, Dr. Macewen on the preparation of chicken-bone	160
— Dr. Macewen on the advantage of threading with hair	160
Dysmenorrhœa by retention, Dr. Barnes on the treatment of	286
— Dr. Richardson on its treatment without alcohol	lxiv
Dyspepsia of phthisis, &c., Dr. Dabbs on the use of ingluvin in	319
Eczema digitorum, Dr. Finny on the treatment of	265
— of the palms, Dr. Bulkley on the treatment of	li
— pudendi, Dr. Liveing on saccharine urine as a local irritant in	267
Empyema, Dr. Ferguson on Fraentzel's antiseptic treatment of...	96
— Mr. McIlvor Goyder on respiratory irrigation in after-treatment of	98
Electricity in labour, Dr. Kilner on effect of the induced current	271
Electrolysis, Dr. Althaus on the treatment of tarsal tumours by	123
Enlarged prostate, Mr. T. Smith on the treatment of	220
Epilation, Dr. Squire on an improved method of...	lvii
Enteric fever, Dr. Baumler on diagnosis of the mildest forms of	17
— Dr. Bristowe on the treatment of	19
— Dr. Shelly on the antiseptic treatment of	13
Epilepsy, M. Hambursin on the use of cocculus indicus in	xv
Epileptic attacks of children, Dr. Harkin on chlorate of potash in	xv
Epithelioma, Mr. Hulke's cases of	54
— Mr. Hutchinson on	45
Ethylate of sodium, Dr. Richardson on its use in nævus and other growths	188
Ethyl iodide, Prof. See on its use in asthma	xxix
Excision of the wrist-joint, Dr. Roger Williams's improved method of	117
Eye affections, Dr. Tichborne on salicylate of atropine in	lxii
Eyelids, Dr. Althaus on the treatment of tarsal tumours of the	123
Facial neuralgia, Dr. Dumas on crystallized aconite in	xviii
Faradism, Dr. Kilner on its effect on parturition	274
Fatty heart, Dr. Balfour on the diagnosis of	66
— Dr. Fothergill on the diagnosis of the	58
<i>Ferguson</i> , Dr. G. B., on Fraentzel's antiseptic treatment of empyema	96
Fever, enteric, Dr. Bristowe on the treatment of	19
— Dr. Shelly on the use of carbolic acid and iodine in	13
— intermittent, Dr. Grinnell on iodine in	xiii
— remittent, Dr. Bomford on the use of aconite in	26
— typhoid, Dr. Baumler on the mildest forms of	17
— Dr. Kennedy on the treatment of...	7
— Dr. McEwen's notes on cases of	15
— Dr. Tomkins on its treatment by salicylate of soda	10
— typhus, Dr. Fitzmaurice on the treatment of	2
Fingers, Dr. Finny on diagnosis and treatment of eczema of the...	262
— Dr. Bulkley on the treatment of eczema of the	li
<i>Finny</i> , Dr. J. M., on eczema digitorum and its treatment...	262
Fistula-in-ano, Mr. Gay on the operation for	xxxiv
— perineal, Mr. Chiene on the treatment of	214
<i>Fitzmaurice</i> , Dr. R., on typhus fever and its treatment	1

	PAGE.
Flatulent distension of the colon, Dr. Burnet on the treatment of	110
Forceps, Dr. Lyons's removable axis-traction rods for	292
——— deliveries, Dr. More's analysis of 200 cases	275
Foreign body in the ciliary region, Dr. Wolfe on a case of	237
Fothergill, Dr. J. M., on the diagnosis of the fatty heart	58
Foulis, Dr. D., on some points in tracheotomy	171
Gairdner, Dr. W. T., on a case of phthisis ab hæmoptœ	86
Galvanic cautery, use of in malignant disease of cervix uteri	291
Galvanism, Dr. Kilner on the induced current in labour	271
——— Dr. Max Schaeffer's method of treating asthma by	102
Galvano-puncture in aneurism of the aorta, Dr. Ord on	180
Gastric irritability, Dr. Fothergill on bromohydric acid in	xviii
Gastrotomy in rupture of the uterus, Dr. Willett's case of	269
Genu valgum, Mr. Swan on colotomy with the chisel in	120
Godlee, Mr. R. J., on the use of Volkmann's spoon in lupus	248
Goitre, Dr. Woakes on the pathogeny and treatment of	164
Gonorrhœa, Mr. Cheyne on the treatment of	xlvi
Gout, Dr. Meldon on the pathology and treatment of	37
——— occurring in surgical patients, Dr. Hector Cameron on	146
Grinnell, Dr., on iodine as a substitute for quinia in fevers	xiii
Gross, Dr. S. W., on the diagnosis of mammary tumours	284
Guarana in sick headache, Dr. Wilks on...	xvii
Hæmoptysis, Dr. Gairdner on the relation of phthisis and	86
Hands, Dr. Bulkley on treatment of chronic eczema of the palms	li
Harris, Dr. V., on the pathology of angina pectoris	69
Headache, Dr. Beard on citrate of caffeine in	xvi
——— Dr. Wilks on guarana in	xvii
——— after quinine, Dr. Fothergill on bromohydric acid in	xvii
Heart, Dr. Reid on restoration of action of when it has ceased to beat	xxvi
——— fatty, Dr. Fothergill on the diagnosis of	58
Hemorrhage from the bowels in enteric fever, Dr. Bristowe on	23
Hemorrhoids, Prof. H. Smith's serrated and cutting cautery for	207
Hernia, Prof. Annandale on treatment with catgut and Listerian antiseptics	199
——— inguinal, Mr. Spanton's new instrument for immediate cure of	204
High temperature in enteric fever, Dr. Bristowe on the reduction of	24
Hooping-cough, use of bromohydric acid and quinine in...	xviii
Hutchinson, Mr. J., on the local origin of cancer	41
Hypophosphites, Dr. Churchill on the	314
Hysteria from ovarian excitement, Dr. Fothergill on bromohydric acid in...	xvii
Ingluvin, Dr. Dabbs on the employment of	319
Intermittent fever, Dr. Grinnell on iodine as a substitute for quinia in	xiii
Intestinal obstruction, Dr. Maclaren on the aspirator in	112
Inguinal hernia, Mr. Spanton's new instrument for	204
Iodine as a substitute for quinia in intermittent fever, Dr. Grinnell on	xiii
Iris, Dr. Wolfe on inflammation and other diseases of the	235
Iritis, parenchymatous, Dr. Wolfe on	238
——— plastic, Dr. Wolfe on	238
——— serous, or dropsy of the aqueous chamber, Dr. Wolfe on	238
——— syphilitic, Dr. Wolfe on	239
Irreducible hernia, Prof. Annandale on the treatment of	200
Irrigation of the chest in empyema, Mr. McIlvor Goyder's method	98
James, Dr. P., on the salicylates of soda and other bases	308
Kennedy, Dr. H., on typhoid fever and its treatment	5
Kilner, Dr. W. J., on effect of the induced current upon parturition	271
Knock-knee, Mr. Swan on condylotomy with the chisel in	120



	PAGE.
Labium, Dr. Reid's operation by thermo-cautery for malignant disease of	177
Labour, Dr. Nesbitt on ether <i>versus</i> chloroform in	lxvii
Latham, Dr. P. W., on some points in acute rheumatism and diabetes	29
Ligature of femoral artery, Mr. McGill on salicylic silk dressings in	144
Ligatures, carbolised catgut, Dr. MacMacewen on	153
———— Prof. Lister on	127
————chromicised catgut, Dr. Macewen on	154
———— Prof. Lister on	134
Liquor ferri hypophosphitis comp., Dr. Churchill on	314
Lister, Prof. J., on the catgut ligature	127
———— on the preparation of chromicised catgut...	134
Lithotrity, Sir H. Thompson on the operation at a single sitting	208
Little, Dr. E. M., on antiseptic surgery under Prof. Esmarch	124
Living, Dr. R., on saccharine urine in chronic eczema	267
———— on the use of croton oil in ringworm	260
Loring, Dr. E. G., his operation for new pupil after cataract operations	222
Lung diseases, Dr. Pollock on the pathology of	90
Lupus, Dr. Richardson on the ethylate of sodium in	194
———— Mr. Godlee on the use of Volkmann's sharp spoon in	248
Lyon, Dr. J. S., his removable axis-traction rods for midwifery forceps	292
 Macewen, Dr. W., on points connected with immediate treatment of wounds	152
———— on the drainage of wounds—button sutures	157
Mackenzie, Dr. G. H., on the infection of phthisis, and its bearings on treatment	82
Maclaren, Dr. R., his enterotomy tube for preventing prolapse of bowel	114
———— on the aspirator in intestinal obstruction	112
Malignant disease of cervix uteri, use of galvanic cautery in	291
———— labium, Dr. Reid's operation by thermo-cautery	177
Mammary tumours, Dr. Gross on the diagnosis of	284
McBride, Dr. P., on the treatment of aural polypi by rectified spirits	241
McCall Anderson, Dr., on soothing ointments in skin diseases	lviii
McEwen, Dr. F. A., his notes on typhoid fever	15
McGill, Mr. A. F., on salicylic silk as a surgical dressing	141
McIvor Goyder, Mr. C., on respiratory irrigation in empyema	98
Medical complications of surgical practice, Dr. Cameron on	146
Meldon, Dr. A., on the pathology and treatment of gout	37
More, Dr. J., on the long and short forceps in midwifery	275
Morphia and chloroform, Dr. Crombie on combined use of for anæsthesia	296
Morris, Mr. M., on the treatment of ringworm	256
Mother's marks, Dr. Richardson on removal of by ethylate of sodium	192
Moxon, Dr. W., on angina pectoris and its treatment	xxiv
Multiple neuroma, Dr. Prudden on forty cases of	177
Muscular rheumatism, anodyne amyl colloid in	xx
 Nævus, Dr. Richardson on its treatment by ethylate of sodium	183
Nasal polypus, Dr. Richardson on the ethylate of sodium in	192
Nephritis, acute, Mr. Robson on nitro-glycerine in	304
Nervous exhaustion, Dr. Fothergill on bromohydric acid in	xvii
Neuralgia, Dr. Granville on its treatment by mechanical means	xx
———— Dr. Richardson on croton chloral in	xviii
———— facial, Dr. Dumas on crystallised aconitia in	xviii
———— Dr. Sawyer on gelseminum in	xix
———— Dr. De Wolfe on gelseminum in	xix
———— use of anodyne amyl colloid in	xx
Neuroma, multiple, Dr. Prudden on cases of	177
Nitrite of amyl as an antidote in chloroform poisoning, Dr. Burrall on	xxviii
———— in angina pectoris, Dr. Balfour on	64
Nitro-glycerine in acute nephritis, Mr. Robson on	305
 Obstetric forceps, Dr. Lyons's removable axis-traction rods for	292
———— Dr. More on the long and short	275
Obstruction of the bowel, Dr. Maclaren on the aspirator in	112

	PAGE.
Ointments, Dr. McCall Anderson on application of in skin diseases	lix
————— Dr. Crocker's ung. zinci oleatis, formula for	lviii
————— Dr. Sawyer's oleate of lead ointment, formula for	lviii
————— Erasmus Wilson's ung. oxidi zinci benzoatum, formula for	lviii
————— Hebra's ung. diachyli alba, formula for	lviii
Ord, Dr. W., M. his case of aneurism of the aorta	180
Ozæna, Dr. Richardson on the ethylate of sodium in	194
Ovariectomy, Dr. Bantock on	lxvii
Pain treated by mechanical vibrations, Dr. Granville on	xx
Paroxysmal angina pectoris, Dr. Balfour on its treatment	65
Parturition, Dr. Kilner on the effect of the induced current upon	271
Perfectly bloodless operations, Prof. Esmarch on	xlvi
Perineum, Dr. Reid's operation for restoration of	212
Pertussis, Dr. Liebreich on the use of croton chloral in	xxii
Phthisis, Dr. Dabbs on ingluvin in the dyspepsia of	319
————— Dr. Landouzy on the arrest of cough in	xxxix
————— Dr. Mackenzie on the infection of, and its bearings on treatment	82
————— ab homæptœ, Dr. Gairdner on a case of	86
Plastic operations. Dr. Wolfe's new method of performing	243
————— splints, Prof. Gamgee's improved millboard	xlvi
————— Dr. Eldridge on asbestos felt for	xlvi
Pneumonia, Dr. Pollock on the pathology of	92
Pollock, Dr. J. E., on prognosis and treatment of chronic disease of the chest	90
Polypi, aural, Dr. M'Bride on instillation of rectified spirits in	241
————— M. Politzer on the treatment of	lx
Power, Mr. H., on the after-treatment of cataract	228
Prolapse of uterus and bladder, Dr. Reid's operation in a case of	213
Prolapsus ani, Prof. H. Smith's new serrated and cutting cautery for	207
Prostate, Mr. Smith on chronic enlargement of the	218
Prudden, Dr. T. M., on a case of multiple neuroma	177
Prurigo, M. Lallier on the use of carbolic acid in	liii
Pruritus ani, Dr. Packard on the treatment of	liii
————— vulvæ, Dr. Wiltshire on the treatment of	279
Psoriasis, Dr. Thin on its treatment by pyrogallic acid	246
————— Dr. B. Squire on the use of chrysophanic acid in	lviii
Pupil, Dr. Loring's operation for new, after cataract operations	222
Pye, Mr. W., on salicylic cotton-wool antiseptic dressings	144
Pyrogallic acid, Dr. Thin on its use in psoriasis	246
Quinia, Dr. Grinnell or iodine as a substitute for in fevers	xiii
Reducible hernia, Prof. Annandale on the treatment of	203
Reid, Dr., his operation in a case of prolapse of uterus and bladder	212
Remittent fever, Dr. Bomford on the use of aconite in	26
Renton, Dr. J. C., on the treatment of club-foot	119
Respiratory irrigation in after-treatment of empyema, Mr. Goyder on	98
Restoration of heart's action when it has ceased to beat, Dr. Reid on	xxvi
Retention of urine from enlarged prostate, Mr. T. Smith on the treatment of	221
Rheumatism, acute, and diabetes, Dr. Latham on some points in	29
————— in acute necrosis of the long bones, Dr. Cameron on	148
————— occurring in connection with surgical practice, Dr. Cameron on	147
Richardson, Dr. B. W., on alcohol as an antispasmodic	xxvi
————— on the ethylate of sodium in nævus and other marks	187
————— on the treatment of neuralgia	xviii
Ringworm, Dr. Ladriet de Lacharriere on the treatment of	lvi
————— Dr. Liveing on the use of croton oil in	260
————— Dr. Squire on an improved mode of epilation in	lvii
————— Dr. Squire on the use of chrysophanic acid in	lviii



	PAGE.
Ringworm, Mr. Cottle on the treatment of	lxi
— Mr. Morris on the treatment of	256
— Mr. Morris on the ill effects of over-treatment	258
<i>Robson</i> , Mr. A. W. M., on nitro-glycerine in Bright's disease	304
Rupture of the uterus, Dr. Willett on gastrotomy in a case of	269
Saccharine urine as a local irritant in eczema pudendi, Dr. Liveing on	267
Salicylate of ammonia, Dr. James on	309
— cinchonidia, Dr. James on	310
— lime, Dr. James on	309
— lithia, Dr. James on	309
— quinia, Dr. James on	309
— potash, Dr. James on	309
— soda, Dr. James on	308
— soda in the treatment of typhoid fever, Dr. Tomkins on	10
Salicylic cotton-wool as an antiseptic surgical dressing, Mr. Pye on	144
— silk as an antiseptic surgical dressing, Mr. McGill on	141
<i>Salt and Son's</i> inventions:—Bowkett's new clinical thermograph	311
Sclerotomy, Dr. Galezowski's new method of performing	lxii
<i>Shelly</i> , Dr. C. E., on the antiseptic treatment of enteric fever	13
Sick headache, Dr. Beard on citrate of caffeine in	xvi
— Dr. Wilks on guarana in	xvii
Skin diseases, Dr. Bulkley on the use of sulphur in	lix
— Dr. McCall Anderson on soothing ointments in	lviii
<i>Smith</i> , Dr. E., on catarrh of the stomach in children	103
<i>Smith</i> , Mr. H., his new cautery for hemorrhoids and prolapsus	207
<i>Smith</i> , Mr. T., on chronic enlargement of the prostate	218
Soothing ointments in skin diseases, Dr. McCall Anderson on	lviii
<i>Spanton</i> , Mr. W. D., his treatment of inguinal hernia by a new instrument...	204
Splints, plastic, Dr. Eldridge on asbestos felt for	xlvi
— Prof. Gamgee's millboard	xlvi
Sponge tents, Dr. Cole on	lxx
Sprained ankle, Mr. Fox's treatment of	xlvii
<i>Squire</i> , Dr. B., on an improved mode of epilation in ringworm	lvii
Startin's mixture in skin diseases, formula for	lix
Stimulants, Dr. Bristowe on the use of in fevers	24
— Dr. Kennedy on the use of in typhoid fever	7
Stomach, Dr. Smith on the treatment of catarrh of in children	103
Stone in the bladder, Sir H. Thompson on the choice of operations for	211
Strangulated hernia, Prof. Annandale's antiseptic treatment of	199
Sugar in the urine, Dr. Cameron on the intermittent occurrence of	116
Sulphur in skin diseases, Dr. Bulkley on the use of	lix
Sulphuretted hydrogen and ammonia in the urine, Dr. Cameron on	115
<i>Swan</i> , Mr. R. L., on condylotomy with the chisel in genu valgum	120
<i>Tacey</i> , Mr. W. G., on the appearance of the blood-cells in anæmia	81
Talipes and equino-varus, Dr. Renton's treatment of	119
Tarsal tumours, Dr. Althuns on their treatment by electrolysis	123
Tattoo marks, Dr. Richardson on removal by ethylate of sodium	192
Thermograph, description of Mr. Bowkett's new patent	311
<i>Thin</i> , Dr. G., on the treatment of psoriasis by pyrogallie acid	246
<i>Thompson</i> , Sir H., on lithotripsy at a single sitting	208
Tic douloureux, Dr. Liebreich on croton chloral hydrate in	xxi
<i>Tomkins</i> , Dr. H., on the use of sodium salicylate in typhoid fever	10
Tonic for children, Dr. Churchill on the hypophosphites as a	314
Tourniquet, Dr. Macewen on elastic webbing as a	152
Tracheotomy, Dr. Foulis on the size of tubes used at different ages	172
— Dr. Foulis on the exact site of operation in	174
Tumours, mammary, Dr. Gross on the diagnosis of	284

	PAGE.
Typhoid fever, Dr. Baumler on the mildest forms of ... ..	17
————— Dr. Bristowe on the treatment of ... ..	19
————— Dr. Kennedy on the nature and treatment of ... ..	5
————— Dr. McEwen's notes on the treatment of ... ..	15
————— Dr. Shelly on the antiseptic treatment of ... ..	13
————— Dr. Tomkins on the use of salicylate of soda in ... ..	10
Typhus fever, Dr. Fitzmaurice on the treatment of ... ..	2
Urine, Dr. Cameron on sulphuretted hydrogen and ammonia in ... ..	115
————— Dr. Cameron's notes on the pathology of the ... ..	115
Uterus and bladder, Dr. Reid's case of prolapse of ... ..	213
————— Dr. Willett's case of gastrotomy in rupture of ... ..	269
Variations of temperature in disease, Mr. Bowkett's new thermograph for recording ... ..	311
Vollmann's sharp spoon, Mr. Godlee's case of lupus treated by ... ..	248
Vomiting of pregnancy, Dr. Dabbs on the use of ingluvin in ... ..	319
————— Dr. Fothergill on bromohydric acid in ... ..	xvii
Vulvar pruritus, Dr. Wiltshire on the treatment of ... ..	279
Vulvitis, Dr. Wiltshire on the treatment of ... ..	281
Warts, Dr. Richardson on the use of sodium ethylate for... ..	197
Watson, Mr. S., on the use of the catgut ligature in aneurism ... ..	185
Willett, Dr. E. M., on gastrotomy in rupture of the uterus ... ..	269
Williams, Dr. W. R., his improved method of excising the wrist-joint ... ..	117
Wiltshire, Dr. A., on the treatment of pruritus vulvæ ... ..	279
Woakes, Dr. E., on the treatment of bronchocele or goitre ... ..	164
Wolfe, Dr. J. R. his new plastic operation ... ..	243
————— on inflammation and other diseases of the iris ... ..	235
Woolsorters' disease, Dr. Bell on the different forms of ... ..	252
Wound-drainage, Dr. Macewen on the various materials used for... ..	157
Wounds, Dr. Macewen on the precautions used in dressing ... ..	164
————— Dr. Macewen on some points in the immediate treatment of ... ..	152
Wrist-joint, Dr. Williams's improved method of excising the ... ..	117
Yeo, Dr. J. B., on the treatment of asthma by the induced current... ..	101



# GENERAL INDEX

TO

BRAITHWAITE'S

## RETROSPECT OF MEDICINE,

1878—1880.

VOLS. LXXVII TO LXXXII INCLUSIVE.

\*\*\* Space is left after each letter for those who may wish to insert any additional Index.

	<i>Vol.</i>	<i>Page.</i>
Abdomen, Dr. Griffith on exploration of by hand per rectum...	80	311
— Mr. Teale on exploration of in obstruction of bowel	79	168
Abdominal compression, Dr. Mackenzie on the treatment of ascites by	78	130
— section in intestinal obstruction, Mr. Jessop on	80	182
— tumours, Dr. Thornton on the diagnosis of	77	288
— tumours, Mr. Heath on the diagnosis of	79	154
— tumours, Mr. Wells on mode of examining patients with	78	284
— tumours, Mr. Wells on the surgical treatment of	78	293
Abnormally high temperatures, Mr. Teale on	81	39
Abortion, Dr. Noel Smith on hypodermic injection of ergotin in	79	xlii
Abscesses, facial and superficial, Salt and Son's miniature aspirator for	79	361
Absorbent and antiseptic surgical dressings, Mr. Gamgee on	81	xlii
— cotton-wool for medical and surgical purposes	80	328
Acetate of alumina as an antiseptic, Medical Times and Gazette on	82	329
Acidity of stomach, Drs. Ringer and Murrell on glycerine in	82	90
— of urine, Dr. Balfe on the effect of bicarbonate of potash on	78	345
Acids, Dr. Dougall on disinfecting by	81	52
Acne, Dr. Law's treatment of	80	lv
— Dr. Parsons's method of using sulphur for	80	lv
— inveterate, Dr. Liveing on the treatment of	77	191
— rosacea, Dr. Eldridge on the use of ergotin in	81	lii
— rosacea, Mr. Startin on the treatment of	78	229
Aconite, Dr. Dobie on its influence in pneumonia	80	74
— Dr. Rabagliati on its use in pneumonia	80	76
Aconitia, Dr. Oulmont on its use in neuralgia	81	87
Acoustic apparatus, Dr. McKeown on a new	80	214
Actual cautery, Mr. Lec on use of in surgical operations	78	348
— in nævus, Mr. Walker on the use of the	82	240
— in ovariectomy, Mr. Knowsley Thornton on	82	296
Acupressure in wounds of superficial palmar arch, Mr. Bellamy on	78	182
Acute disease, Mr. Persse White on the use of turpentine in	77	46
— periostitis and endostitis, Mr. Bryant on operative interference in	80	133
— rheumatism, Dr. Maclagan on salicin and salicylic acid in	80	41
— rheumatism, Dr. Sinclair on the treatment of	81	70
— rheumatism, Dr. Ord on the graduated bath in	78	32
— rheumatism, Dr. Sharkey on salicylate of soda in	78	63
— rheumatism, Dr. Southey on	79	33
— rheumatism, Dr. Southey on the salicylate of soda treatment of	81	67
— rheumatism, Dr. Squire on salicin and salicylic acid in	81	74
— rheumatism, Dr. Young on the use of the salicylates in	82	45
— rheumatism, Ed. of Med. Times and Gazette on the salicylates in	82	44

	<i>Vol.</i>	<i>Page.</i>
After-pains, Dr. Kelly on their treatment ... ..	77	260
Ague, Dr. Hollis on the use of quinetum sulphate in ... ..	80	xi
——— Dr. Vinkhuysen on quinetum in ... ..	77	324
——— Mr. Simon on the true cause of ... ..	81	xi
Air filtering, Mr. Wm. Thompson on purification of rooms by ... ..	77	344
——— of law courts, Dr. Goolden on a means of purifying the ... ..	77	342
——— or water pads for splints, Dr. Thompson on ... ..	82	133
Albumen in the urine, Sir H. Thompson on ... ..	81	215
Albuminuria, Dr. Brunton and Mr. D'Arcy Power on the albuminous substances which occur in the urine in ... ..	77	105
——— Dr. Johnson on its etiology and pathology ... ..	81	136
——— Dr. Saundby on the diagnostic value of ... ..	80	96
Alcohol, Dr. Englisch on subcutaneous injection of in varix ... ..	77	xxiii
——— in fever, Dr. Carpenter on ... ..	78	xiii
——— in fever, Dr. Jones on the value of ... ..	80	99
——— in health and in disease, Sir R. Christison on ... ..	80	xviii
Alcoholic and narcotic poisoning, Mr. Hamilton on injection of ammonia ... ..	80	300
——— coma, Dr. Macewen on the diagnosis of ... ..	79	95
——— drinks, Dr. Carpenter on as medicines and as poisons ... ..	78	319
Alcoholism, Dr. Taquet on heredity in ... ..	77	39
Alizarin and chrysophanic acid, Dr. Adams on ... ..	78	224
Alkalies, Dr. Balfe on the effects of on urine ... ..	78	345
——— Dr. Cornillon on the therapeutic effect of in diabetes ... ..	81	138
Alkaline urine, Dr. Ralfe on a form of dyspepsia associated with ... ..	82	87
Amblyopia, central, Dr. Berry on ... ..	82	218
——— tobacco, Mr. Nettleship on the diagnosis of ... ..	81	275
Ametrometer, Mr. Carter on Dr. Thomson's new instrument ... ..	82	208
Ammonia, Mr. Hamilton on injection in alcoholic and narcotic poisoning ... ..	80	300
Amputation, Dr. Gaurveau's treatment of stumps after ... ..	77	xlvi
——— Prof. Spence's simple method of dressing stumps after ... ..	81	xlvi
——— Mr. Barker on dry cotton-wool permanent dressing in ... ..	81	177
——— at hip-joint, Mr. Davy's lever for controlling hemorrhage ... ..	81	188
——— at the shoulder-joint, Dr. Moore on arresting hemorrhage ... ..	81	xlvi
——— of thigh, Mr. Jacobson on Stokes's method of ... ..	78	142
Amyloid degeneration, Mr. Budd on ... ..	80	54
Amyl nitrite as a cardiac stimulant, Dr. Minor on ... ..	78	328
Anasarca, Dr. Wickers on the surgical treatment of ... ..	79	xxii
Anæmia, general, Dr. Addison on a remarkable form of ... ..	79	47
——— progressive pernicious, Dr. Mackenzie on ... ..	79	42
Anæsthetics, Dr. Gowers on ethyl bromide ... ..	81	lxxvi
——— Dr. Marion Sims on bromide of ethyl, or hydrobromic ether ... ..	82	324
——— Dr. Meymott Tidy on chloroform, ether, and nitrous oxide ... ..	79	349
——— Dr. Turnbull on hydrobromic ether in labour ... ..	82	lxxi
——— Mr. Clover on the administration of ethidene dichloride ... ..	82	319
——— Mr. Macleve on a new combination anæsthetic ... ..	82	lxxvii
——— Mr. Osborne on Clover's inhaler ... ..	82	317
——— Mr. Osborne on administration of at St. Thomas's Hospital ... ..	82	314
——— Mr. Osborne on administration of in eye operations ... ..	82	317
——— Mr. Osborne on the treatment of threatening asphyxia from ... ..	82	318
——— Mr. Osborne on the treatment of threatening syncope from ... ..	82	318
——— Mr. Rivington on chloramyl as an ... ..	80	289
——— Mr. Wills Richardson's india-rubber inhaler for ether ... ..	82	327
——— Prof. Liebreich on butyl-choral as an ... ..	78	306
——— Report to British Med. Association on the action of ... ..	79	343
——— Report on the dichloride of ethylene as an ... ..	79	346
——— Third Report to British Medical Association on action of ... ..	80	281
——— for dental operations, Mr. Hutchinson on ... ..	80	lxxxvi
——— mixture, compound, Dr. Rose on the use of a ... ..	80	lxxxviii
Anchylosis, Prof. Verneuil on ... ..	81	185
——— of knee, Mr. Kilgariff's operation by Barton's method ... ..	81	204
Aneurism of the anterior tibial, Mr. Cornish on Esmarch's bandage in ... ..	77	169
——— popliteal, Mr. Hewetson's case cured by digital compression ... ..	80	157
Angina pectoris, Mr. Robson on nitro-glycerine in ... ..	82	345
——— on the preparations of nitro-glycerine in ... ..	80	xxix



	<i>Vol.</i>	<i>Page.</i>
Ankle-joint, sprained, Mr. Dacre Fox on the treatment of ... ..	82	135
Anti-neuralgic remedy, Mr. Macdonald on menthol as an ... ..	82	335
Antipyretic, Mr. Prideaux on salicylic acid as an ... ..	78	59
———— action of iodine and carbolic acid, Dr. Rothe on the intense	82	9
———— treatment of typhoid fever, Dr. Cayley on the ... ..	82	1
Antipyretics, Dr. Erskine Stuart's observations on ... ..	77	43
Antiseptic, Editor of Medical Times and Gazette on thymol as an ...	77	137
———— Mr. Macdonald on menthol as an ... ..	82	332
———— Mr. Prideaux on salicylic acid as an ... ..	78	59
———— dressings, Mr. Chiene on the lessening of the expense of	77	133
———— dressings, Mr. Tait on absorbent cotton-wool and gauze	82	xliii
———— dressings, Prof. Lister's, short directions for ... ..	82	li
———— dressings, H. Ranke on the use of thymol for ... ..	78	xxxvi
———— dressings with boric acid, Dr. Solger on ... ..	80	xlvi
———— excision of the knee-joint, Mr. Coppinger on ... ..	82	107
———— gauze, Dr. Beatson on the preparation of ... ..	81	149
———— gauze, Prof. Bruns's simple plan of preparing ... ..	81	147
———— gauze, Prof. Lister's latest improvement of ... ..	81	105
———— marine lint as a dressing in military surgery, Dr. Snow on	81	162
———— method in ovariectomy, Dr. Hime on the ... ..	79	332
———— operations and dressings, objections to Lister's system of	77	129
———— operations and dressings, Mr. Bradley's system of ... ..	77	130
———— osteotomy in osseous deformities, Dr. Macewen on ... ..	79	209
———— ovariectomy, Prof. Nussbaum on ... ..	80	lxxvi
———— ovariectomy, Mr. Knowsley Thornton on ... ..	80	270
———— spray apparatus, with hand and foot bellows, Salt and Son's	78	364
———— surgery, Dr. Barnes on some incidental benefits of ... ..	79	339
———— surgery, Dr. Thomas on the statistics of ... ..	77	132
———— surgery, Editor of Medical Times on acetate of alumina in	82	329
———— surgery, Mr. Messenger Bradley on ... ..	77	124
———— surgery, Mr. MacCormac on ... ..	81	143
———— surgery, Mr. Holmes on ... ..	81	149
———— surgery, Mr. Spencer Wells on ... ..	78	175
———— surgery, Mr. Savory on Lister's method ... ..	80	116
———— surgery, Prof. Lister's demonstration in ... ..	80	99
———— surgery, details of Prof. Lister's method ... ..	81	145
———— system, Dr. Burman on a further development of the ... ..	81	175
———— system, Editor Medical Times and Gazette on the bases of the	77	36
———— system, Prof. Lister on surgical statistics and the ... ..	81	170
———— system, Prof. Spence on surgical statistics and the ... ..	81	163
———— thymol gauze, Mr. Spencer Wells on the new ... ..	77	141
———— transfusion of human blood, Dr. Macewen's case of ... ..	80	163
———— treatment, Editor British Medical Journal on surgical statistics	82	137
———— treatment, Dr. Beatson on carbolised catgut ligatures ... ..	82	140
———— treatment, Dr. Beatson on carbolised catgut sutures ... ..	82	155
———— treatment in relation to ovariectomy, Dr. Thorburn on ... ..	77	309
———— treatment of compound fractures, Prof. Volkmann on ... ..	77	153
———— treatment of empyema, Prof. Lister on the ... ..	81	104
———— treatment of large open wounds, Prof. Lister on ... ..	81	140
———— treatment of minor surgery, Dr. Ogilvie Will on the ... ..	78	177
———— use of thymol, H. Ranke on the ... ..	80	xlvi
Aortic regurgitation, Dr. Moxon on ... ..	77	82
Apoplexy, cerebral, Dr. Foster on subcutaneous injection of ergotine in	78	74
Apparatus for rendering impure air respirable, Dr. Ball's ... ..	78	309
Arnica, Dr. Planat's treatment of boils with ... ..	79	x1
Arnold & Son's inventions :—Dr. Alexander's urinary test case for bedside	79	361
———— Mr. Shepard's vaporifer, bronchitis kettle, inhaler and		
———— portable vapour bath combined ... ..	79	363
Arsenic, Drs. Eldridge, Cutler, and Bradford on physiological action of	80	lxxxv
———— Dr. Lockie on its use as a blood and cardiac tonic ... ..	79	123
———— in psoriasis, Dr. Farquharson on the use of ... ..	82	242
———— in skin diseases, Dr. Farquharson on ... ..	82	240
Arsenical wall-paper poisoning, Mr. Hogg on ... ..	80	303
Artery, anterior tibial, Mr. Cornish on Esmarch's bandage in aneurism of	77	169

	<i>Vol.</i>	<i>Page.</i>
Arteries, Mr. Bryant on behaviour of carbolised catgut ligatures on	79	247
— Mr. Jones on spontaneous arrest of hemorrhage from small	77	171
Artificial digestive juices, Dr. Roberts on the preparation of ...	81	xxiv
— respiration, Dr. Howard's rules for his direct method of ...	78	314
— respiration, New York Life-Saving Society's rules ...	78	315
— respiration, Royal Humane and National Lifeboat Societies' rules	78	316
Artificially-digested (peptonised) food, Dr. Roberts on ...	82	82
Ascites, Dr. Goodhart on paracentesis by capillary tubes ...	78	189
— Dr. Mackenzie on its treatment by abdominal compression	78	130
— Dr. Southey on gradual drainage by a single fine cannula ...	78	193
— Dr. Spender's successful treatment of a case of ...	77	98
— and ovarian dropsy, Mr. Wells on the diagnosis between ...	78	287
Aspiration of joints, Editor of <i>Lancet</i> on ...	82	121
Aspirator, Clover's, Sir H. Thompson's modification of ...	79	267
— Salt's miniature, for facial and superficial abscesses ...	79	361
Asthenopia, hysterical, Mr. Vernon on ...	77	244
Asthma, Dr. Berkart on the immediate causes of ...	78	107
— Dr. Berkart on the predisposing causes ...	78	101
— Dr. Berkart on the treatment of ...	82	61
— Dr. Huchard on the hypodermic injection of morphia in ...	80	xxxi
— Dr. Riddell on nitrite of amyl in cases of ...	80	294
— Dr. Thompson on the value of drug-smoking in ...	80	93
— Dr. Thompson on the value of fumigation in ...	80	93
— Dr. Thompson on drug-smoking for ...	79	355
— Dr. Thorowgood on the treatment of ...	79	150
— severe, Mr. Robson on nitro-glycerine in ...	82	344
— spasmodic, Dr. Leared on arsenic smoking for ...	79	xxi
Asthmatic paroxysms, Dr. Duckworth on nitre-paper fumigation in	77	331
Atmospheric influence in pulmonary diseases, Dr. Thorowgood on ...	81	100
Atropia, Dr. Day on hypodermic injection of in tetanus ...	80	60
— Dr. Murrell on its use in the night-sweats of phthisis ...	80	84
— and choral in the treatment of idiopathic tetanus, Dr. Paul on	77	63
Atropine, Dr. Eddison on subcutaneous injection of in opium poisoning	80	298
— Dr. Fothergill on subcutaneous injection of in opium poisoning	77	xvi
Audiometer, Prof. Hughes's ...	80	223
Aural and nasal cavities, Mr. Mason on foreign bodies in ...	77	251
— and nasal polypi, Dr. Bartleet's snare for ...	77	182

Bacilli, Dr. Buchner's researches respecting ...	82	25
Bacillus anthracis, Prof. Lister on the ...	82	19
Bacteria, Dr. Koch's investigations respecting ...	82	19
— and ammonia, Mr. Messenger Bradley on ...	77	127
Bacterium of fowl-cholera, Toussaint and Pasteur's investigations on	82	21
Bad air, Dr. Goolden on an effectual antidote for ...	77	342
Baldness, Dr. Rohe on Kaposi's treatment of ...	81	299
— Dr. Schmitz on subcutaneous injection of pilocarpine for ...	80	lv
Bandages, Prof. Lister's elastic web, for antiseptic dressings ...	79	226
— Martin's india-rubber, for ulcers of legs, &c. ...	79	233
— application of ...	79	236
— Mr. Gamgee on ...	79	242
Baptisin, Dr. Rutherford on the medicinal properties of ...	81	136



	<i>Vol.</i>	<i>Page.</i>
Bath treatment of fever, Dr. Reiss on a constant ... ..	82	xvii
Beef-tea, on the preparation of ... ..	78	lx
Belladonna, Dr. Pearse on its use in nictitation ... ..	82	lxix
————— Dr. Wiglesworth on its use in whooping-cough ... ..	79	140
————— Mr. Gasquet on the action and uses of ... ..	80	307
————— as a cardiac and respiratory stimulant, <i>Med. Press and Cir.</i> on	79	128
————— its use in the night-sweats of phthisis ... ..	80	xxxiii
Berlin Obstetrical Society's report on puerperal fever ... ..	78	281
Bigelow's operation for stone, Mr. Coulson's cases of ... ..	81	241
————— Mr. Smith on ... ..	81	231
————— Mr. Teevan on ... ..	82	173
————— Prof. Stokes's case of ... ..	81	245
————— Sir H. Thompson on ... ..	81	236
Bile, Dr. Rutherford on the physiological action of drugs on ... ..	81	132
Bismuth injections in dysentery, Dr. Houghton on ... ..	80	xxxvii
Bladder, Mr. Nunn on quinine in chronic irritation of ... ..	77	217
————— Sir H. Thompson on catarrh of the ... ..	81	215
————— Sir H. Thompson on examination by Nietzsche-Leitner endoscope	81	xxxix
————— affections, Mr. Harrison's pessary-catheter for ... ..	77	218
————— cysts, Sir H. Thompson on phosphatic deposits in ... ..	77	203
————— paralysed, M. Sutton on hypodermic injection of ergot in ... ..	78	xxxii
Bleeding from divided vessels, Mr. Jones on spontaneous arrest of ... ..	77	170
Blepharospasm, Dr. Buzzard's successful treatment of ... ..	78	196
Blood-clotting, Dr. Barnes on the significance of ... ..	80	65
————— in the vessels, Mr. Pepper on ... ..	80	61
Bloodletting, Prof. Wharton Jones on ... ..	79	56
Blood-poisoning, surgical, Mr. Savory on the prevention of ... ..	80	107
Bluestone, Dr. Pick on calomel for relieving pain after application to eye	80	lxiii
Boils, Dr. Planat's treatment of, with arnica ... ..	79	xl
Bone, Mr. Bryant on operative interference in inflammation of ... ..	80	125
Boric acid, Dr. Solger on antiseptic dressings with ... ..	80	xlvi
Boracic acid, Dr. Atkinson on its use in puerperal fever ... ..	81	lxxv
————— Dr. Atkinson on its use as an internal remedy ... ..	81	lxxvi
————— Dr. Theobald on its use in eye diseases ... ..	82	lxviii
————— Mr. Butler on the treatment of cholera by ... ..	78	xi
Brachial artery, Mr. Gore on a case of embolism of the ... ..	78	183
Breast, Sir J. Paget on indurations of, becoming cancerous ... ..	79	335
Bright's disease, Dr. Gairdner on the treatment of ... ..	82	99
Bromide of ethyl as an anæsthetic, Dr. Marion Sims on ... ..	82	324
————— of potassium in ovarian menorrhagia, Dr. Meadows on ... ..	80	256
Bronchitis, Dr. Brunton on the use of cod liver oil in ... ..	77	333
————— Dr. Duckworth on nitre-paper fumigation in ... ..	77	331
————— Dr. Monroe on inhalation of carbolic acid in ... ..	82	59
————— Mr. Bell on the use of eucalyptus globulus in ... ..	77	329
————— chronic, Dr. Leeson on accumulation of cerumen simulating	81	99
————— putrid, Dr. Curschmann on carbolic acid inhalations in	81	91
Buboes, Dr. Cottle on the use of iodoform in the treatment of ... ..	77	337
Burns and ulcers, Mr. Duncan on healing by union of granulations	81	280
Bursæ mucosæ, use of Martin's elastic bandages in ... ..	79	234
Bursitis, chronic, Dr. Austin on the seton in ... ..	80	134
————— chronic, Dr. Roxburgh on the antiseptic treatment of ... ..	77	136
Button suture, Dr. Ogilvie Wills's improved ... ..	80	156
————— Mr. Duncan on the use of, in burns and ulcers ... ..	81	281
Butyl-chloral, Prof. Liebreich on ... ..	78	306

	<i>Vol.</i>	<i>Page.</i>
Calabar bean, Dr. Read on its use in idiopathic tetanus	79	92
Calculus, renal, Mr. Pick on the diagnosis of	81	217
—— vesical, Dr. Buchanan on importance of early detection of	81	226
Calcium phosphate in nutrition, M. Dusart on	80	xli
Calomel and sugar, Drs. Polk and Slop on danger of keeping mixed	80	325
—— vapour bath, Mr. Lee on its use in syphilis	77	255
Cancer, Dr. Arnott on the local treatment of	80	49
—— Editor of Lancet on Mr. Clay's new treatment for	81	66
—— Mr. Simon on some points of science and practice concerning	77	49
—— Prof. Clay on its treatment by Chian turpentine	82	27
—— of the breast, British Medical Journal on the pathology of	81	330
—— of the breast, Dr. Gill on Chian turpentine in	82	34
—— of the breast, Dr. Gross on the diagnosis of	82	301
—— of the breast, Sir J. Paget on	79	335
—— of the tongue, Mr. Barwell's case of excision of	80	167
—— of the stomach or rectum, Dr. Thomas on koumiss in	77	xxviii
—— of the uterus, Mr. Kenyon on Chian turpentine in	82	34
—— of the womb, Dr. Drury on	82	35
—— of the womb, Mr. Clay's new method of treating	81	58
Carbolic acid, Dr. Eade on the medical uses of	78	lxi
—— Dr. Hall's cases of lupus treated by application of	82	262
—— Dr. Munro on inhalation of in respiratory affections	82	57
—— M. Fleischmann on subcutaneous injection of in prurigo	80	lviii
—— ointment, in small-pox, Mr. Paterson on	78	xlvi
—— treatment of piles, Dr. Smith on the	80	182
Carbolic gauze, Dr. Beatson on the preparation of	81	155
—— Prof. Bruns's simple plan of preparing	81	147
—— Prof. Lister on	81	105
Carbolised catgut, Dr. Beatson on influence of tissues on in aseptic cases	82	146
—— Dr. Beatson on influence of tissues on in septic cases	82	147
—— Dr. Beatson on points of importance connected with	82	149
—— ligature holders	82	144
—— ligatures, Dr. Beatson on the application of	82	144
—— ligatures, Dr. Beatson on the preparation of	82	141
—— ligatures, Mr. Bryant on	79	247
—— sutures, Dr. Beatson on	82	155
—— silk sutures, Dr. Beatson on	82	152
—— glycerine, Dr. Liveing on its use in ringworm	81	294
Carbonic acid poisoning, Dr. Ball's apparatus for use in	78	309
Cardiac and respiratory stimulant, Med. Press and Cir. on belladonna as	79	128
—— dropsy, Dr. Shapter on citrate of caffein in	76	157
—— sedative, Editor of Lancet on erythrophleine as a	82	55
—— stimulant, Dr. Minor on amyl nitrite as a	78	328
—— tonic, Dr. Lockie on arsenic as a	79	123
Casein, Dr. Roberts on its conversion into peptone	82	83
Castor-oil treatment of chronic dysentery, Dr. Ralfe on the	81	118
Casts of the uriniferous tubes, Dr. Sawyer on	77	122
Cataract, Dr. Wolfe on how to obviate risk of failure in the operation for	81	260
—— Mr. Carter on the suction tube in	81	266
—— Mr. Teale on extraction by suction	81	264
—— Prof. Wharton Jones on operation by discission from behind	82	209
—— operations, Dr. Story on the methods employed in	82	lxvii
—— senile, Mr. Morton on the treatment of	81	lxiii
Catarrh, Mr. Wilson on the use of iodoform in	81	xix
—— of the bladder, Sir H. Thompson on	81	215
—— of the bladder and acute cystitis, Deecke on lactic acid in	82	xxxiv
Catarrhal sore throat, Dr. Squire on salicylic acid in	80	xviii
Catching cold, Dr. Berkart on thermal influences in	78	113
Catgut drainage of wounds, Dr. Ogilvie Will on the	78	177
—— for ligation of arteries in their continuity, Dr. Bæchel on	82	xlvi
Catheter, female, Salt and Son's flexible metallic	80	279
Catheterism in impervious strictures, Mr. Gay on	78	343
—— in stricture on physiological principles, Mr. Gay on	79	283
Caustic combined with congelation in treatment of cancer, Dr. Arnott on	80	49



	<i>Vol.</i>	<i>Page.</i>
Caustics, Dr. Richardson on the ethylates of sodium and potassium as	78	351
Cautery, actual, Mr. Lee on its use in surgical operations ... ..	78	348
Celluloid as a base for dental purposes ... ..	80	lxxxix
Central amblyopia, Dr. Berry on ... ..	82	218
Cerebral apoplexy, Dr. Foster on the use of ergotine in ... ..	78	74
Cervical curette, Dr. Alex. Duke's new ... ..	82	308
———— metritis, Dr. Dabney on the use of ergotin in ... ..	81	lxvii
Cervix, Dr. Simpson on the use of the volsella in operations about the	80	233
———— uteri, Mr. Lawson Tait on dilatation of by vulcanite plugs ...	81	307
Chancres, Dr. Sheen on the use of iodoform for ... ..	80	314
———— Mr. Berkeley Hill on the use of iodoform in ... ..	77	253
Chaulmoogra oil, Dr. Yeo on its use in phthisis ... ..	79	134
———— Dr. Young on its use in leprosy ... ..	78	355
———— Mr. Cottle on its use in leprosy ... ..	80	lviii
Chemical theory of putrefaction, Mr. Messenger Bradley on the ...	77	124
Chian turpentine, Prof. Clay on, and its use in cancer ... ..	82	27
———— in cancer of the breast, Dr. Gill on ... ..	82	34
———— in cancer of the uterus, Mr. Kenyon on ... ..	82	34
———— in cancer of the womb, Dr. Drury on... ..	82	35
Chilblains, Gillibert's liniment for ... ..	79	xl
Children, Dr. Smith on the treatment of convulsions in ... ..	82	311
Chloasma, Dr. Cottle on the use of iodoform in ... ..	77	337
Chloral, Dr. Day on its use in chorea ... ..	80	56
———— Dr. Ogston on a new test for ... ..	78	305
———— and atropia, Dr. Watson Paul on the treatment of tetanus by	77	63
———— and Indian hemp, Dr. Boon on treatment of tetanus by ...	77	61
———— injections in gonorrhœa, Dr. Pasqua on ... ..	82	lxiv
———— liniment, M. Catillon's formula for ... ..	81	lxxvii
———— ointment, M. Catillon's formula for ... ..	81	lxxvii
———— poisoning, Dr. Coghill on nitrite of amyl in ... ..	80	295
———— treatment of delirium tremens, Dr. Balfour on the ... ..	79	103
Chloramyl as an anæsthetic, Mr. Rivington on ... ..	80	289
Chloride of calcium in phthisis, Dr. Neale on ... ..	82	xxvi
———— of lime as a disinfectant, Dr. Nutter on the use of ... ..	81	48
Chloroform, Mr. Osborne on the administration of as an anæsthetic	82	314
———— an an anæsthetic, Dr. Meymott Tidy on ... ..	79	350
———— ethidene, and ether, Report on effects of on blood-pressure	80	281
———— in operations about the mouth, Mr. Mills's apparatus for	79	255
———— woodcut of Mr. Mill's apparatus for administering ... ..	79	364
Cholera, Mr. Butler on its treatment by boracic acid ... ..	78	xi
Chorea, Dr. Day on the treatment of ... ..	80	56
———— Dr. Wright on subcutaneous injection of curara in ... ..	78	75
Chromic-acid catgut sutures, Dr. Ogilvie Will on the preparation of	78	181
Chronic bronchitis, Dr. Monro on inhalation of carbolic acid in ...	82	59
———— bursitis, Dr. Roxburgh on the antiseptic treatment of ...	77	136
———— dysentery, Dr. Ralfe on the treatment of... ..	81	117
———— irritation of bladder, Mr. Nunn on quinine in ... ..	77	217
———— ulcers, Dr. Atkinson on the use of sheet lead for ... ..	80	227
———— ulcers, Dr. Martin on his pure rubber bandages for ... ..	80	228
———— ulcers, Mr. McGill on the use of Martin's bandages for ...	80	226
Chrysophanic acid, Dr. Adams on its use in psoriasis ... ..	78	215
———— Dr. Ogilvie Will on its use in psoriasis ... ..	78	209
———— Dr. Smith on its use in skin diseases ... ..	80	lvii
———— Prof. Maynard on its use in chronic psoriasis ... ..	81	291
———— and alizarin, Dr. Adams on ... ..	78	224
———— and phosphorus in psoriasis, Dr. Squire on ... ..	77	195
Circular constriction of the pedicle in ovariectomy, Mr. Lawson Tait on	79	333
Citrate of caffein, Dr. Leach on its use as a diuretic ... ..	82	345
———— Dr. Shapter on its use in cardiac dropsy ... ..	79	157
———— Dr. Thorowgood on its use in asthma ... ..	79	152
Clamp for crushing hemorrhoids, Mr. Pollock on a new ... ..	82	162
———— in ovariectomy, Mr. Knowsley Thornton on the ... ..	82	294
Cleft palate, Dr. Woakes's instrument for inserting stitches in operations	82	170
Climatic influence in pulmonary disease, Dr. Thorowgood on... ..	81	100

	<i>Vol.</i>	<i>Page.</i>
Clinical thermometers with magnifying lens, Messrs. Salt and Son's...	78	365
Club-foot, Dr. Ogston on an improved method of treating ...	79	190
———— Mr. West on resection of the tarsal bones for talipes ...	79	220
———— and its treatment, Mr. Davy on ...	77	156
———— congenital, Mr. Baker's treatment of after infancy ...	80	144
Coagula, puerperal, Dr. Matthews Duncan on intra-uterine ...	82	272
Coagulation of the blood, Mr. Pepper on the causes of ...	80	62
Cocculus Indicus (picrotoxine) as a remedy in various diseases ...	81	97
Coccygodynia, Dr. Matthews Duncan on ...	79	325
Codeia as a sedative, Dr. Saundby on ...	79	323
Cod-liver oil, Dr. Brunton on the administration of ...	77	333
Cold in the head, Dr. MacLagan on its treatment by salicin ...	77	97
—— water injections in chronic diarrhœa, Dr. Messemmer on ...	78	xxv
—— water treatment of typhoid fever, Dr. Cayley on the ...	82	5
Collodion in relaxation of the membrana tympani, Dr. M'Keown on ...	82	237
———— vesicating, Dr. Hisch on the preparation of ...	82	lxxx
Colo-puncture in intestinal obstruction, Dr. M'Gown's case of ...	82	92
Colotomy in intestinal stricture, Dr. Coupland and Mr. Morris on ...	77	186
Coloured exudates in eczema, Dr. Lauder Lindsay on ...	77	192
Coma, Mr. Forster on the thermometer as an aid to prognosis in ...	81	xvii
Complete intra-peritoneal ligature of ovarian pedicle, Mr. Thornton on ...	82	297
Compound fracture, Dr. Brown on its treatment by tinct. benzoin co. ...	82	117
———— Prof. Volkmann on the treatment of ...	77	153
Compression of abdominal aorta in post-partum hemorrhage, Dr. Bradley ...	78	252
———— of the abdomen for cure of ascites, Dr. Mackenzie on ...	78	130
Congelation as a local remedy in cancer, Dr. Arnott on ...	80	49
Congenital inguinal hernia in a child, Dr. Buchanan's radical operation ...	82	157
Conjunctivitis, Dr. Pick on relief of pain from use of copper sulphate ...	80	lxiii
———— chronic, Dr. Dabney on its treatment by ergot ...	81	lxix
———— purulent, Dr. Wolfe on the treatment of ...	82	229
Constipation, Dr. Bell on ...	81	121
Consumption and allied diseases, Dr. Anderson on the mineral theory of ...	78	334
Contagion, Dr. Thorne on ...	78	22
———— Mr. Simon on its nature and mode of action ...	81	1
———— and infection, Dr. Grimshaw on the intimate nature of ...	78	1
Contagious diseases, Dr. Greenfield on the pathology of ...	81	27
Contagium vivum, Dr. Burdon Sanderson on ...	77	26
Convulsions in children, Dr. Smith on the treatment of ...	82	311
———— puerperal, Mr. Fearnley's case of ...	79	311
Copper test capsules for sugar, Dr. Ralfe on the use of ...	82	xxxv
Cornea, Dr. Emrys-Jones on section of in hypopion keratitis ...	79	295
Corneal transplantation, Dr. Wolfe on ...	81	256
———— ulcers, Dr. Gunn on the treatment of ...	82	lxviii
Corns, M. Gezow's remedy for... ..	82	lvii
Cotton-wool permanent dressing in amputations, Mr. Barker on ...	81	177
Cough, Dr. Cheesman on oxalate of cerium in ...	82	xxii
———— of phthisis, Dr. Fothergill on the treatment of ...	78	94
———— Dr. Saundby on codeia as a sedative for ...	79	353
———— Dr. Thompson on drug-smoking for ...	79	357
Croton chloral, Dr. Riddell on the uses of in neuralgia, &c. ...	80	291
———— oil and salicylic acid in the treatment of ringworm, Dr. Cottle on ...	82	245
Croup, Dr. Moir on the treatment of ...	79	144
Crushing, Mr. Pollock's treatment of hemorrhoids by ...	82	160
Curara, Dr. Day on its use in chorea ...	80	57
———— Dr. Wright on subcutaneous injection of in chorea ...	78	75
Curette, cervical, Dr. Alex. Duke's new ...	82	308
Cus as a tænicide in tapeworm ...	82	xxxiii
Cystitis, Sir H. Thomson on its propagation by means of instruments ...	80	192
———— chronic, Dr. Newman on antiseptic injections in ...	82	xxxiv
Cysto-phosphatic deposits, Sir H. Thompson on ...	77	206
———— deposits, Sir H. Thompson on their prevention ...	77	209



	<i>Vol.</i>	<i>Page.</i>
Davos-am-Platz, Dr. Allbutt on the treatment of phthisis at	78	95
————— Dr. Allbutt on the climate of	80	86
————— Dr. Hassall on the climate of	80	89
Deafness, Dr. McKeown's new acoustic apparatus for	80	214
Delirium tremens, Dr. Balfour on the treatment of	79	102
————— Dr. Crowther on tincture of capsicum in	79	104
————— Dr. Riddell on croton-chloral in	80	292
Diabetes, Dr. Cornillon on the effects of alkalies in	81	138
————— Dr. Pavy on some points connected with	77	112
————— Dr. Pavy on some points connected with	78	134
————— insipidus, Dr. Kennedy on its successful treatment	77	118
————— mellitus, Dr. Hunt on the use of ergot in	82	103
Diarrhœa, chronic, Dr. Messemmer on cold water injections in	78	xxv
————— infantile, Dr. Renton on oxide of zinc in	77	103
————— of typhoid, Dr. O'Neile on turpentine and lucca oil in	78	xvi
Dichloride of ethylene as an anæsthetic, Report on the action of	79	346
Diet suitable for brain-work, Dr. Brunton on	77	xv
Digestion of fats, Dr. Roberts on the emulsive ferment	82	78
————— of starch, Dr. Roberts on the therapeutics of the	81	107
Digestive ferments and their therapeutical uses, Dr. Roberts on	80	xc
————— ferments, Dr. Roberts on	82	76
————— juices, artificial, Dr. Roberts on the preparation of	81	xxiv
Digitalis as a diuretic, Dr. Russell on external use of	79	xxv
————— in aortic disease, Dr. Moxon on	77	82
Dilatation, Mr. Cooper Forster on the treatment of stricture by	78	205
————— of cervix by continuous elastic pressure, Mr. Lawson Tait on	81	307
————— of os and cervix uteri, tupelo tents for	77	261
————— of the os in labour, Dr. J. Braithwaite on digital	81	301
————— of the os in labour, Dr. Stephenson on digital	78	246
————— of the uterus with tents, Dr. Coley on	79	315
Diphtheria, Dr. Barker on salicylic acid as a prophylactic against	80	xvi
————— Dr. Bell on the treatment of	78	123
————— Dr. Law on tincture of muriate of iron in	80	xxxii
————— Dr. Lownds on the treatment of	79	22
————— Dr. Squire on the use of salicylic acid in	80	xvii
————— Dr. Thursfield on the origin of	78	122
————— Dr. Thursfield on the dissemination of	78	120
————— Mr. Pownall on the use of salicylic acid in	80	xv
————— Mr. Stuart on sulphur as a topical application in	79	26
————— and garget, Dr. Atkinson on	79	60
————— and garget, Dr. Thursfield on	79	61
————— and sore throat, Dr. Bowles on	79	27
————— and typhoid fever, Dr. Dukes on	79	19
————— diffusion, Dr. Downs on	79	31
Discession from behind for cataract, Prof. Wharton Jones on	82	209
Disease, Prof. Lister on the relation of micro-organisms to	82	18
Diseases, Dr. Bristowe on the treatment of	81	33
Diseased joints, Prof. Verneuil on the treatment of	81	182
Disinfectant, Dr. Jencken on gun-cotton as a	78	56
Disinfectants, Dr. Barnes on	80	xcii
————— Dr. Notter on the experimental study of	81	45
Disinfection by acids, Dr. Dougall on	81	48
Dislocation of head of radius forwards, Dr. Ogilvie Will on	80	122
————— of the hip, Dr. Bigelow on	78	158
Displacement and descent of the womb, Dr. Duncan on	82	lxxi
————— and descent of the womb, Mr. Knowsley Thornton on	82	lxxi
Diuretic, Dr. Leech on citrate of caffein as a	82	345
————— Dr. Russell on external use of digitalis as a	79	xxv
————— remedies, Dr. Gairdner on the use of in Bright's disease	82	99
Double extension in pelvic joint diseases and injuries, Prof. Wood on	82	112
Douche, uterine, Mr. Masterman's	81	lxxv
Drainage for wounds, Prof. Lister on horsehair as a	77	142
————— of wounds, Dr. Neuber's method of using decalcified bone for	81	147
————— tubes, Dr. Goodhart on use of in paracentesis	78	193

	<i>Vol.</i>	<i>Page.</i>
Drainage tubes for antiseptic operations, Mr. Coppinger's india-rubber	82	111
Drilling and trephining bone in chronic inflammation, Mr. Bryant on	80	125
Dropsy, abdominal, Dr. Spender on the diagnosis and treatment of	77	101
———cardiac, Dr. Shapter on citrate of caffein in ... ..	79	157
Drowning, Dr. Howard's direct method of artificial respiration ...	78	314
Drug-smoking, Dr. Thompson on its efficacy in asthma ... ..	80	93
——— Dr. Thompson on the therapeutical value of ... ..	79	354
Drunk or dying? Mr. Erichsen on the diagnosis of ... ..	77	166
Duboisia myoporoides, Dr. Ringer on the mydriatic properties of ...	77	340
Dupuytren's finger-contraction, Mr. Adams's treatment of ...	78	170
Dysentery, Dr. Houghton on the use of bismuth injections in... ..	80	xxxvii
——— Dr. King on its treatment by rectal injections ... ..	81	119
——— chronic, Dr. Ralfe on the treatment of ... ..	81	117
Dysmenorrhœa, spasmodic, Dr. Matthews Duncan on ... ..	80	lxxxii
Dyspepsia, Dr. Balfe on the administration of alkaline bicarbonates in	78	347
——— Dr. Phillips on the use of picrotoxine in various forms of	81	98
——— associated with alkaline urine, Dr. Ralfe on ... ..	82	87
Dyspnoea from meteorismus, in asthma, Dr. Berkhart on treatment of	82	74
Earache, Prof. Wharton Jones on the treatment of ... ..	79	60
Ear, Dr. Lecson on accumulation of wax, simulating chronic bronchitis	81	99
—— Dr. Sims on extraction of foreign bodies from the ... ..	79	297
—— Mr. Brown on removal of foreign bodies from the ... ..	81	lxv
—— syringes, Dr. Marion Sims on ... ..	79	298
—— trumpets, Dr. McKeown on ... ..	80	218
Early phthisis, Dr. Fothergill on the treatment of ... ..	78	88
Ecraseur, galvanic, Dr. Gould on its use for radical cure of varicocele	82	204
Eczema, Dr. Crocker on its treatment by oleate of zinc ... ..	79	299
——— Dr. Crocker on thymol in .. ..	77	202
——— Dr. Lauder Lindsay on coloured exudates in ... ..	77	192
——— Dr. Sawyer on oleate of lead in ... ..	81	287
——— Dr. Sawyer on oleate of zinc in the treatment ... ..	80	225
——— chronic, Dr. Fisher on oxide of zinc in ... ..	81	liiii
——— erythematous, Dr. Bulkeley on Startin's mixture in ... ..	82	lvii
——— of the hand, often miscalled psoriasis palmaris, Dr. Spender on	80	223
——— of the palm, chronic, Dr. Lush's treatment of ... ..	81	liv
Elastic compression, Dr. Ogilvie Will on some surgical uses of ...	79	225
Elbow-joint, Mr. Annandale on excision of the ... ..	79	182
Electricity, Dr. Myrtle's case of epilepsy treated by the continuous current	79	66
——— in the diagnosis of nervous diseases, Dr. Bennett on ... ..	81	77
Embolism of brachial artery followed by gangrene, Mr. Gore on ...	78	183
Empyema, Prof. Lister on the antiseptic treatment of ... ..	81	104
——— local, Dr. Wilks on its diagnosis and treatment ... ..	80	79
——— with fetid expectoration, inhalation of carbolic vapour in	82	60
Emulsive ferment and the digestion of fats, Dr. Roberts on ... ..	82	78
Encysted tumours in conspicuous positions, Dr. Foster's mode of removing	82	lvii
Endoscope, Sir H. Thompson on the "Neitze-Leitner"... ..	81	xxxii
Enemata, Mr. Brown on administration of, in intestinal obstruction	81	111
Enteric fever, Dr. Cayley on the antipyretic treatment of ... ..	82	1
——— Dr. Collie on the use of the cold bath in ... ..	81	25
——— Dr. Collie on the etiology of ... ..	79	11
——— Dr. Murchison on the incubation period of ... ..	79	2
——— Dr. Paget on during infancy ... ..	79	21



	<i>Vol.</i>	<i>Page.</i>
Enteric fever, Dr. Rothe on the antiseptic treatment of ... ..	82	9
————— Dr. Smith on the treatment of pyrexia of ... ..	78	37
————— Dr. Walder on an epidemic from diseased meat ... ..	79	32
————— Dr. Wiltshire on during infancy ... ..	79	20
————— Editor of British Medical Journal on a recent epidemic of ... ..	80	11
————— Sir W. Jenner on the treatment of ... ..	82	11
————— Sir W. Jenner on the use of cold baths in ... ..	82	17
————— and diphtheria, Dr. Clement Dukes on ... ..	79	19
Epilepsy, Dr. Hughlings Jackson on the diagnosis of ... ..	79	62
————— Dr. Myrtle's case of, with irregular and painful menstruation ... ..	79	66
Epileptiform hysteria, Dr. Anderson's case of ... ..	79	68
————— Dr. Smyly's two cases of ... ..	79	70
Epistaxis, Mr. Keetley on its treatment by hot water ... ..	79	253
Epithelial cancer of the uterus, Mr. Clay's treatment of ... ..	81	60
————— tumours, mammary, British Medical Journal on pathology of ... ..	81	330
Ergotin, Dr. Dedrickson on its use in heat-apoplexy ... ..	78	73
————— Dr. Eldridge on its use in acne rosacea ... ..	81	lii
————— Dr. Foster on subcutaneous injection of in cerebral apoplexy ... ..	78	74
————— Dr. Hickinbotham on its use in labour ... ..	81	lxviii
————— Dr. Hunt on its use in diabetes mellitus ... ..	82	103
————— Dr. Matthews Duncan on its use in menorrhagia ... ..	82	292
————— Dr. Noel Smith on hypodermic injection of, in abortion ... ..	79	xlii
————— Dr. Peyton on the physiological and therapeutic action of ... ..	80	lxvi
————— Dr. Wells on its use in pneumonia ... ..	80	xxxvi
————— Dr. Weir on its use in post-partum hemorrhage ... ..	78	261
————— M. Paul on hypodermic injection of in metrorrhagia ... ..	78	1
————— M. Sutton on hypodermic injection of in paralysis of bladder ... ..	78	xxxii
————— Prof. Simpson on its efficacy in uterine fibroid tumours ... ..	77	279
Erysipelas, Mr. Leniham on the local treatment of ... ..	82	lvii
————— of the scalp, Mr. Erichsen on ... ..	77	162
Erythema multiforme, Dr. Bulkeley on Startin's mixture in ... ..	82	lvii
Erythematous eczema, Dr. Bulkeley on Startin's mixture in ... ..	82	lvii
Erythrophleine, a new cardiac sedative, Editor of Lancet on ... ..	82	55
Ether, Dr. Meymott Tidy on as an anæsthetic ... ..	79	351
————— Dr. Packard on primary anæsthesia of in short operations ... ..	80	lii
————— Mr. Osborne on the administration of as an anæsthetic ... ..	82	314
————— inhaler, Mr. Wills Richardson's india-rubber ... ..	82	327
Ethidene dichloride as an anæsthetic, Mr. Clover on ... ..	82	319
————— as an anæsthetic, Report on the action of ... ..	79	346
————— as an anæsthetic, Report on the action of ... ..	80	288
Ethyl bromide as an anæsthetic, Dr. Gowers on ... ..	81	lxxvi
Ethylates of sodium and potassium as caustics, Dr. Richardson on ... ..	78	351
Ethylen-dichloride and nitrous oxide gas as an anæsthetic, Mr. Macleve ... ..	82	lxxvii
Eucalyptus globulus, Mr. Bell on the therapeutic uses of ... ..	77	329
Euonymin as an hepatic and intestinal stimulant, Dr. Rutherford on ... ..	81	134
Eustachian tube, Dr. Gruber on dilating or rendering pervious the ... ..	77	246
Eversion of limb after fracture of neck of femur, Mr. Owen on cause of ... ..	81	194
————— of limb after fracture of neck of femur, Mr. Parker on ... ..	81	190
Excision of elbow-joint, Mr. Annandale on ... ..	79	182
————— of knee-joint, Dr. Eben. Watson's splint for ... ..	81	192
————— of knee-joint, Mr. Smith on a suspending lift used after ... ..	81	196
————— of knee-joint, antiseptically, Mr. Coppinger on ... ..	82	107
————— of phalangeal joints, Mr. Prideaux on the ... ..	78	145
————— of the whole tongue, Dr. Purcell on the painless method of ... ..	80	163
————— of the whole tongue, Mr. Barwell's method of ... ..	80	165
————— of the wrist in a child, Mr. Fagan's case of ... ..	82	122
Extension apparatus for diseases, &c., of lower extremities, Mr. Stokes's ... ..	79	200
————— with motion in treatment of hip-joint disease, Mr. Adams on ... ..	77	147
Extraction of cataract, Dr. Wolfe on operations for ... ..	81	260
————— by suction, Mr. Carter on ... ..	81	266
————— by suction, Mr. Teale on ... ..	81	264
————— of foreign bodies from the ear, Dr. Sims on ... ..	79	297
Eyeball, Dr. Wolfe on the effect of tea-drinking on the nutrition of ... ..	80	213

	<i>Vol.</i>	<i>Page.</i>
Facial nerves, Dr. Riddell on croton-choral in painful affections of ...	80	292
— neuralgia, M. Fereol on the use of sulphate of copper in ...	80	xxiii
— Prof. Gubler on the use of aconitin in ...	80	xxiii
Fæces, Dr. Matthews Duncan on retention of ...	81	115
Fat, Dr. Lauder Brunton on the use and administration of ...	77	332
Fatty tumours, Mr. Francis Mason on the diagnosis of ...	77	lii
Febrile temperature, Dr. Sydney Ringer on influence of perspiration on	78	53
Feet, sweaty, Dr. Thin on the treatment of... ..	82	lxiii
Femur, Mr. Bryant on advantages of parallelism in treating injuries of	81	187
— Mr. Jacobson on Stokes's supra-condyloid amputation of ...	78	142
— Mr. Owen on eversion of limb after fracture of neck of ...	81	190
— Mr. Parker on eversion of limb after fracture of neck of ...	81	192
Fermentation, lactic, Prof. Lister on its bearings upon pathology ...	77	1
Fever, Dr. Carpenter on alcohol in ... ..	78	xiii
— Dr. Goodridge on the pathology of ... ..	78	17
— Dr. Macnaughton Jones on the value of alcohol in ... ..	80	9
— Dr. Reiss on a constant bath treatment of ... ..	82	xvii
— Dr. Walder on a typhoid epidemic from diseased meat ... ..	79	16
— Sir R. Christison on the use of alcohol in ... ..	80	xix
— acute specific, Dr. Thorne on the origin of ... ..	78	22
— enteric, Dr. Collie on the etiology of ... ..	79	11
— enteric, Dr. Ord on the use of the graduated bath in ... ..	78	36
— enteric, Dr. O'Neile on the treatment of the diarrhœa of ... ..	78	xvi
— enteric, Dr. Smith on the treatment of the pyrexia of ... ..	78	37
— intermittent, Dr. Sullivan on the nature of... ..	78	41
— malarial, Dr. Sullivan on ... ..	78	48
— puerperal, Dr. Matthews Duncan on ... ..	82	277
— puerperal, Report of Berlin Obstetrical Society on ... ..	78	281
— typhoid, Dr. Bakewell on the use of aconite in ... ..	82	xviii
— typhoid, Dr. Cayley on the antipyretic treatment of ... ..	82	1
— typhoid, Dr. Cayley on the pathology and treatment of ... ..	81	21
— typhoid, Dr. Collie on the use of the cold bath in ... ..	81	25
— typhoid, Dr. Dukes on diphtheria and ... ..	79	19
— typhoid, Dr. Irvine on the temperature in relapse of ... ..	80	8
— typhoid, Dr. King on the etiology of ... ..	80	1
— typhoid, Dr. Rothe on the antiseptic treatment of ... ..	82	9
— typhoid, Dr. Thorne's report of a recent epidemic of ... ..	80	11
— typhoid, Sir W. Jenner on the treatment of ... ..	81	11
— typhoid, during infancy, Dr. Paget on ... ..	79	21
— typhoid, during infancy, Dr. Wiltshire on ... ..	79	20
Fevers, Dr. Murchison on the incubation period of ... ..	79	1
Fibrinous polypus uteri, Dr. Matthews Duncan on ... ..	82	275
Fibroids, uterine, Mr. Jackson's case of spontaneous expulsion of ...	82	287
— uterine, Prof. Simpson on ... ..	77	273
Fibrous tumour of uterus, with inversion, Dr. Duncan on ... ..	79	320
Finger contraction (Dupuytren's), Mr. Adams on the treatment of ...	78	167
— joints, Mr. Prideaux on resection of the ... ..	78	146
Fish as the one sole cause of leprosy, Mr. Hutchinson on... ..	82	264
Fishing-gut sutures, Mr. Walters on the advantages of ... ..	80	161
Fistula in ano, Dr. Lambert on the treatment of ... ..	78	xxvi
— rectal, Mr. Reeves on its treatment by immediate ligation ... ..	78	188
Flatulence, acidity and pyrosis, Drs. Ringer and Murrell on glycerine in	82	90
Forceps, Dr. Bell on Tarnier's obstetric ... ..	79	303
— Dr. Duke's new tractor for ... ..	79	306
— Dr. Hamilton on the use of in tedious labours ... ..	78	241
— Dr. Hamilton on the use of in labour ... ..	82	285
— Dr. Hickinbotham's new ovum and placenta ... ..	79	341
— Dr. Johnston on the use of, at the Rotunda lying-in hospital... ..	79	xlii
— Dr. Radford on the use and value of the long ... ..	79	301
— Editor of British Medical Journal on the discussion on the ... ..	80	270
— Editor of Medical Times and Gazette on the discussion on the ... ..	80	273
— Mr. Hilliard's new appliance for obstetric ... ..	81	335
— Prof. Simpson's modification of Sampson's ... ..	82	308
— and its alternatives in lingering labour, Dr. Atthill on the ... ..	80	lxix



	Vol.	Page.
Forceps, and its alternatives in lingering labour, Dr. Barnes on the ...	80	lxvii
——— operations, Dr. Barnes, how to distinguish between high and low	80	lxvii
Forcipressure and the use of pressure-forceps, Mr. Spencer Wells on ...	80	148
Foreign bodies in the nose and ears, Mr. Mason on ...	77	251
——— in the ear, Mr. Brown on removal of ...	81	lxv
Fracture, Dr. Coskery's plaster of Paris splint for ...	80	li
——— Mr. Duncan on pain as a symptom of ...	80	117
——— Mr. Duncan on the diagnosis of ...	80	119
——— compound, Dr. Brown on tinct. benzoin co. in ...	82	117
——— compound, Prof. Volkmann on the treatment of ...	77	153
——— of femur, Mr. Owen on the cause of eversion after ...	81	190
——— of femur, Mr. Parker on the treatment of ...	81	194
——— of the extremities, Dr. Will on elastic compression in...	79	232
——— of the leg, Mr. Croft on plaster-of-Paris splints for ...	78	134
——— swing, Mr. Gamgee on Salt & Son's improved ...	78	367
——— ununited, Dr. Patterson's case treated by addition of dog's bone	78	147
Fractured ribs or limbs, Mr. Power's method of preparing plaster splints	79	xxxv
Fumigation, Dr. Thompson on its use in asthma ...	80	94
Galvanism, Dr. Southey on its use in a case of blepharospasm ...	78	197
Gangrene of hand and forearm from embolism of brachial artery ...	78	183
——— of the lung, Dr. McLeod on the inhalation of carbolic acid in	82	60
Garget and diphtheria, Dr. Atkinson on ...	79	60
——— Dr. Thursfield on ...	79	61
Gastralgia, Dr. Leared on the use of arsenic in ...	79	xxiii
Gastric catarrh and ulceration, Dr. Thomas on koumiss in ...	77	xxvii
——— ophthalmia, so-called, Mr. Vernon on its treatment ...	77	241
Gelseminum, Dr. Massini on its use in trigeminal neuralgia ...	80	xxvi
Genu valgum, Dr. Macewen's treatment of ...	80	138
——— Mr. Chiene on ...	79	204
——— and varum, Dr. Macewen on antiseptic osteotomy in ...	79	209
Germ-theory, Dr. Bastian on bearing of experimental evidence on ...	77	9
——— Dr. MacLagan on bearing of experimental evidence on ...	77	18
——— contagium vivum, specific infections, Dr. B. Sanderson on	77	26
——— of putrefaction, Mr. Messenger Bradley on ...	77	125
Glandular swellings, Dr. Moleschott on the use of iodoform for...	80	316
Glaucoma, Dr. de Wecker on sclerotomy in different forms of ...	81	267
——— Mr. Higgins on ...	80	205
——— Mr. Swanzy on sclerotomy in ...	81	271
Gleet, Mr. Harrison on irrigation of the urethra for ...	82	201
Glycerine, Dr. Young on its use in the treatment of hemorrhoids ...	80	180
——— Dr. Young on its use in internal hemorrhoids ...	77	180
——— Mr. Jalland on its use in internal hemorrhoids ...	78	xxviii
——— in flatulence, acidity, and pyrosis, Drs. Ringer and Murrell on	82	90
——— tonic, Dr. Larmande on, as a substitute for cod-liver oil ...	82	lxxix
Gonorrhœa, Dr. Bauer on emollient injections in ...	80	lxi
——— Dr. Eldridge on its treatment by ergotin locally ...	81	xxxii
——— Dr. Law on injection of tannic acid in ...	80	lx
——— Dr. Pasqua on hydrate of chloral injections in ...	82	lxiv
Gonorrhœal ophthalmia, Dr. Gunn on the treatment of ...	82	lxv
——— Dr. Wolfe on the treatment of ...	82	229
——— Dr. Theobald on boracic acid in ...	82	lxix
——— Mr. Bader's treatment of ...	82	230

	<i>Vol.</i>	<i>Page.</i>
Gout, Dr. Drew on omission of soda-salts and alcohol in the treatment of	79	37
———Dr. Leared on omission of soda-salts and alcohol in the treatment of	79	40
———Dr. Thomas on the pathology of	82	41
Gouty glycosuria, Dr. Lauder Brunton on	77	xxxii
———habit, Dr. Reynolds on some nervous affections dependent upon	77	64
———heart, Dr. Fothergill on the treatment of	78	329
Granular urethritis, Dr. Eldridge on the use of ergotine in	81	xxxii
Gun cotton, Dr. Jencken on its use as a disinfectant	78	56
Gynecological explorations, Dr. Simpson on the use of the volsella in	80	233
Habitual hypodermic injections of morphia, Dr. Braithwaite on	79	106
Hay fever, Dr. Squire on the use of salicylic acid in	80	xviii
Head, Mr. Erichsen on injuries of the	77	161
———Mr. Erichsen on true and false stunning from concussion on the	77	164
———involuntary rotation of, Dr. Heaton on the treatment of	79	89
Headache, Dr. Symes Thompson on	78	77
———neurosal, Dr. Riddell on croton-choral in	80	291
Hearing better in a noise, Dr. McKeown's explanation of	80	216
———trumpets and tubes, Dr. McKeown on	80	218
Heart, Dr. Fothergill on neurosal and reflex affections of the	79	109
———Dr. Fothergill on neurosal affections of the	77	91
———Dr. Fothergill on some conditions which simulate organic disease	77	84
———Dr. Fothergill on the treatment of hypertrophy of	78	329
———disease, Dr. Moxon on the prognosis of	77	82
———disease, Dr. Moxon on the relievable aspects of	77	75
Heat-apoplexy, Dr. Dedrickson on the use of ergot in	78	73
Hemianæsthesia, Dr. Wilks on the treatment of	79	82
Hemophilia, Dr. Winter on two cases of	82	338
Hemoptysis, Dr. Vesey on the use of pyrogallie acid in	79	133
Hemorrhage, Mr. Clement Lucas on torsion of arteries for prevention of	80	xxix
———during operations, Mr. Wells's pressure forceps to arrest	80	148
———from divided arteries, Mr. Jones on spontaneous arrest of	77	170
———internal, Dr. Vesey on the use of pyrogallie acid in	79	133
———post-partum, Dr. Atthill on hot water injections in	77	316
———post-partum, Dr. Atthill on hot-water injections in	81	337
———post-partum, Dr. Bradley on the treatment of	78	252
———post-partum, Dr. Weir on the prophylactic treatment of	78	260
———post-partum, Dr. Whitwell on hot-water injections in	78	258
———post-partum, Mr. Jones on hot-water injections in	80	lxxix
———unavoidable, Dr. Bell on the cause and treatment of	78	264
———uterine, M. Letulle on subcutaneous injection of ether in	80	lxxxii
———uterine, Mr. Kerr on nitrite of amyl in impending death	81	334
Hemorrhagic diathesis, Dr. Winter on the	82	342
Hemorrhoids, Dr. Bodenhamer's improved method of tying	82	167
———Dr. Smith on the carbolic acid treatment of	80	182
———Mr. Benham on the treatment by crushing	82	166
———Mr. Pollock's treatment of by crushing	82	160
———Mr. Smith on the use of the clamp and cautery in	77	xxxi
———Mr. Smith on the use of the clamp and cautery in	81	211
———external, Dr. Young on the treatment of	80	180
———internal, Dr. Young on glycerine in the treatment of	77	180
———internal, Dr. Young on glycerine in the treatment of	80	181
———internal, Mr. Jalland on the use of glycerine in	78	xxviii
Hemostatic, Mr. Keetley on the use of hot water as an	79	252



	<i>Vol.</i>	<i>Page.</i>
Hepatic depression from intestinal stimulation, Dr. Rutherford on ...	81	133
—stimulants, Dr. Rutherford on ... ..	81	132
Heredity in alcoholism, Dr. Tarquet on ... ..	77	39
Hernia, Dr. Buchanan on the radical cure of, with case ... ..	78	184
—congenital inguinal, Dr. Buchanan's operation for in a child...	82	156
—knife, Mr. Hayes's new form of ... ..	80	173
—knife, Mr. Wills Richardson's ... ..	79	257
—strangulated, Prof. Spence on ... ..	80	175
—strangulated femoral, Sir Astley Cooper on the operation for ...	79	158
Hip-joint, Dr. Bigelow on dislocation of the ... ..	78	158
Hip disease and injuries, Mr. Bryant on a double splint for ... ..	81	186
Hip-joint, Mr. Adams's operation of subcutaneous osteotomy in disease of	81	202
—Mr. Gant's operation of subcutaneous osteotomy in disease of	81	202
—amputation, Mr. Armstrong on the use of Davy's Lever in a case	81	190
—amputation, Mr. Davy's lever for controlling hemorrhage in	81	188
—disease, Dr. Sayre's splints for ... ..	77	152
—disease, Mr. Adams on its treatment by extension with motion	77	147
Homatropin, Mr. Tweedy on the mydriatic properties of ... ..	82	lxix
Hooping cough, Dr. Campardon on tincture of myrrh in ... ..	80	xxxii
—Dr. Squire on the use of salicylic acid in ... ..	80	xviii
—Dr. Wigglesworth on the use of atropia in ... ..	79	140
Horsehair as a drain for wounds, Prof. Lister on ... ..	77	142
Hot water as an hemostatic in surgery, Mr. Keetley on ... ..	79	252
—irrigation in menorrhagia, Dr. Matthews Duncan on ... ..	82	293
Housemaid's knee, chronic, Dr. Austin on the seton in ... ..	80	134
Hydrastin, Dr. Rutherford on the medicinal properties of ... ..	81	135
Hydrobromic ether as an anæsthetic in labour, Dr. Turnbull on ... ..	82	lxxi
—or bromide of ethyl, Dr. Marion Sims on ... ..	82	324
Hyoscyamine, Mr. Gill on the action and use of ... ..	77	326
Hyperpyrexia, Dr. Goodridge on ... ..	78	21
—Dr. Little's case of ... ..	82	18
—Dr. Ord on the use of the graduated bath in ... ..	78	32
—Dr. Philipson's notes on a case of ... ..	82	13
—of enteric fever, Dr. Smith on quinine and the cold bath in	78	41
Hypodermic injections, Dr. Braithwaite on discontinuance of habitual	79	106
—Mr. Stuart on the tartrate of morphia for ... ..	80	xciv
Hypertrophy of the heart, Dr. Fothergill on ... ..	78	329
—of the heart, Dr. Moxon on ... ..	77	75
Hypopion keratitis, Dr. Emrys-Jones on section of the cornea in ... ..	79	295
Hysteria, Dr. Bristowe on a remarkable case of ... ..	79	77
—with amenorrhœa and intercostal neuralgia, Dr. Phillipson on	82	13
Hysterical anæsthesia, Dr. Wilks on the treatment of ... ..	79	82
Hystero-epilepsy, Dr. Anderson on a case of ... ..	79	68
—Dr. Smyly on two cases of ... ..	79	70

Immersion, prolonged, Mr. Cooper on the treatment of syphilitic sores by	80	202
Impermeable gloves ... ..	80	327
Incubation period of scarlet fever and other diseases, Dr. Murchison on	79	1
Indian hemp and chloral, Dr. Boon on the treatment of tetanus by ...	77	60
India-rubber air or water pads for splints, Dr. Thompson on ... ..	82	133
Indurations of the breast becoming cancerous, Sir J. Paget on ... ..	79	335
Inertia of uterus, Dr. Duncan on weak labour from ... ..	77	257
Infantile diarrhœa, Dr. Renton on oxide of zinc in ... ..	77	103

	<i>Vol.</i>	<i>Page.</i>
Infection, Dr. Thorne on the origin of ... ..	78	22
———-and contagion, Dr. Grimshaw on the intimate nature of ...	78	1
Infections, specific, Dr. Burdon Sanderson on ... ..	77	26
Infectious diseases, Dr. Murchison on the duration of contagiousness in	79	4
Infective diseases, Dr. Greenfield on ... ..	81	29
——— processes of disease, Dr. Burdon Sanderson on ... ..	77	21
——— processes of disease, Editor of British Medical Journal on ...	77	32
Inguinal hernia, Dr. Buchanan on the operation for radical cure of ...	78	186
Inhalation in chronic lung affections, Dr. Curschmann's system of ...	81	89
Inhaler for ether anæsthesia, Mr. Richardson's india-rubber ... ..	82	327
——— for medicated vapours, Dr. Adams's ... ..	80	317
Injection of warm water in certain cases of labour, Dr. Kilner on ...	79	309
Injections, vaginal, Mr. Greenway's new form of syringe for ... ..	80	264
Injuries of the head, Mr. Erichsen on... ..	77	161
Insomnia, Dr. Sawyer on the causes and cure of ... ..	78	83
——— Preyer's use of solution of lactate of soda in ... ..	77	72
——— dependent on brain exhaustion ... ..	77	75
——— from defective cardiac power, use of digitalis in ... ..	77	75
——— from muscular spasm, use of chloral in ... ..	77	74
——— from severe pain, opium and morphia in ... ..	77	74
——— from worry, flatus, &c., Dr. Hollis on mustard poultices in...	77	72
Internal hemorrhoids, Dr. Young on glycerine in the treatment of ...	77	180
——— metritis, Dr. Tilt on intra-uterine medication in ... ..	81	324
——— urethrotomy, Mr. Durham's new urethrotome for ... ..	77	227
——— urethrotomy, Mr. Tecvan on ... ..	77	234
Intermittent action of the heart, Dr. Fothergill on ... ..	79	120
——— fever, Dr. Sullivan on the nature of ... ..	78	41
Intestinal obstruction, Dr. Broadbent on the treatment of ... ..	80	186
——— obstruction, Dr. Coats on twisting of the gut as a cause of ...	82	95
——— obstruction, Dr. Jacobson on the treatment of ... ..	80	188
——— obstruction, Mr. Brown on the administration of enemata in	81	111
——— obstruction, Mr. Jessop on abdominal section in ... ..	80	182
——— obstruction, Mr. Teale on the treatment of ... ..	80	191
——— obstruction, Mr. Wagstaffe on tapping the intestine in ... ..	78	126
——— obstruction cured by colo-puncture, Dr. M'Gown's case of ...	82	92
——— stricture, Dr. Coupland and Mr. Morris on ... ..	77	183
——— stricture, Dr. Coupland and Mr. Morris on the diagnosis of	77	189
Intolerance of light, Mr. Vernon on its treatment ... ..	77	241
Intra-uterine puerperal coagula, Dr. Matthews Duncan on ... ..	82	272
——— medication, Dr. Bantock on ... ..	80	260
——— medication, Dr. Godson on the possible dangers of ... ..	81	329
——— medication, Dr. Miller's instrument for ... ..	81	328
——— medication, Dr. Playfair on ... ..	81	318
——— medication, Dr. Tilt on... ..	81	323
——— medication by iodised phenol, Dr. Battey on ... ..	81	324
——— tumours, Dr. Duncan on the diagnosis and treatment of	81	315
Invalid couch and bed-rest, the Matlock ... ..	80	328
——— lift, Mr. Gamgee on a new surgical hammock and ... ..	78	366
Inunction with oil in delicate children, Dr. Moir on advantages of ...	79	146
Inversion of uterus, Dr. Atthill on the treatment of ... ..	80	238
——— of uterus, Dr. Aveling on the treatment of ... ..	80	245
——— of uterus, Dr. Williams on elastic pressure in ... ..	79	319
——— of uterus, Mr. Ford's case of complete ... ..	73	268
——— of uterus following delivery, Dr. J. Braithwaite on ... ..	77	314
Inveterate acne, Dr. Living on the treatment of ... ..	77	191
Involuntary rotation of the head, Dr. Heaton on continued pressure in	79	89
Iodide of starch in lupus erythematodes, Dr. M'Call Anderson on ...	82	258
Iodised phenol, Dr. Battey on intra-uterine medication by ... ..	81	324
Iodoform, Dr. Cottle on the mode of application of ... ..	77	338
——— Dr. Easby on its use in the treatment of ulcers ... ..	81	1xi
——— Dr. Shcen on its use in syphilitic sores ... ..	80	314
——— Mr. Berkeley Hill on its use in venereal sores ... ..	77	253
——— as a local application, Dr. Cottle on ... ..	77	335
——— in naso-pharyngeal disease, Mr. Browne on ... ..	77	xxv



	<i>Vol.</i>	<i>Page.</i>
Iodoformed wood in naso-pharyngeal disease, Dr. Woakes on ... ..	77	xxvi
Ipecacuanha in uterine hemorrhage and parturition, Medical Press on	80	258
Iridectomy and sclerotomy, Dr. De Wecker on ... ..	81	267
———— Mr. Swanzy on ... ..	81	271
Iridin as an hepatic stimulant, Dr. Rutherford on... ..	81	134
Iritis, Prof. Wharton Jones on bloodletting in the treatment of	79	57
Irregular gout, Dr. Thomas on ... ..	82	41
Irritability of actively secreting mammary glands, Dr. Miller on	77	321
Irritable heart from tea-drinking, tobacco smoking, &c. ... ..	77	91
Itch, Dr. Christison's treatment by chloride of lime lotion	82	252
—— Dr. Liveing on the treatment of ... ..	81	295
—— Dr. McCall Anderson's treatment by styrax ointment	82	252
—— Dr. Sang on the diagnosis and treatment of ... ..	82	249
—— Mr. Erasmus Wilson's treatment by sulphur ointment	82	252
—— M. Hardy's treatment by sulpho-alkaline ointment...	82	252
—— and pruritus, Dr. Auerbach on balsam of Peru in ... ..	81	liv

Joints, Editor of Lancet on aspiration of ... ..	82	121
—— Mr. Marsh on chronic affections of joints in children, and excision	82	118
—— Mr. Wood on double extension in diseases and injuries of	82	112
—— Prof. Verneuil on ankylosis of ... ..	81	183
—— phalangeal, Mr. Prideaux on excision of the ... ..	78	145
Juglandin, Dr. Rutherford on the medicinal properties of ... ..	81	135

Kidney, Mr. Pick on the symptoms of calculi in the ... ..	81	218
Knee-joint, Dr. Eben. Watson's splint for excision of the ... ..	81	195
—— Mr. Coppinger's splint for antiseptic excision of the ... ..	82	110
—— Mr. Kilgarrieff's case of osseous ankylosis of ... ..	81	204
—— Mr. Henry Smith on a suspending lift used after excision of	81	197
Knock-knee, Dr. Macewen's treatment by simple incision ... ..	80	138
—— Mr. Chiene on the treatment of ... ..	79	204
Koumiss, Dr. Thomas on its use in phthisis and other diseases ... ..	77	xxvii

Labour, Dr. Barnes on nitrite of amyl in uterine and muscular spasms in	80	lxviii
—— Dr. Braithwaite on digital dilatation of the os in ... ..	81	301
—— Dr. Elder on immediate placental delivery in ... ..	81	lxviii
—— Dr. Hamilton on the use of the forceps in... ..	82	283
—— Dr. Hamilton on the management of tedious ... ..	78	241
—— Dr. Hickinbotham on the use of ergotin in ... ..	81	lxviii
—— Dr. Kelly on the treatment of after-pains ... ..	77	260
—— Dr. Kilner on injection of warm water in certain cases of	79	309
—— Dr. Stephenson on digital dilatation of the os uteri in ... ..	78	246

	<i>Vol.</i>	<i>Page.</i>
Labour, Dr. Thompson on a method of superseding the short forceps ...	79	308
———Dr. Turnbull on hydrobromic ether as an anæsthetic in ...	82	lxxi
———Mr. James on a method of superseding the short forceps ...	79	308
———powerless, from premature uterine retraction, Dr. Duncan on ...	77	257
———weak, from inertia of uterus, Dr. Matthews Duncan on ...	77	257
Lamp for medical purposes, Salt and Son's new frontal illuminating ...	80	326
Latent albuminuria, Dr. Johnson on ... ..	81	136
Lateral curvature of spine, Mr. Berry's new apparatus for ... ..	80	136
Leeches, how to get to bite ... ..	82	lxxviii
Leprosy, Dr. Young on its treatment by chaulmoogra oil ... ..	78	355
———Mr. Cottle on the use of chaulmoogra oil in ... ..	80	lviii
———true, Mr. Hutchinson on the etiology of ... ..	82	263
Ligature of arteries in their continuity, Dr. Bæchel on catgut for ...	82	xlvi
———of hemorrhoidal tumours, Dr. Bodenhamer's improved method ...	82	167
———of the pedicle in ovariectomy, Mr. Knowsley Thornton on ...	82	297
———of pedicle in ovariectomy, Mr. Knowsley Thornton on ...	77	294
———of pedicle in ovariectomy, Mr. Doran on ... ..	77	300
Ligatures, carbolic catgut, Mr. Bryant on ... ..	79	247
———tendon, Mr. Callender and Mr. Spanton on ... ..	77	173
———tendon, Mr. Garner on ... ..	77	xxii
Lint, paper, Mr. Chiene on ... ..	79	224
Lister's antiseptic dressings, short directions for ... ..	82	li
———system, Dr. Beatson on carbolic acid as used in ...	81	xlvi
———Dr. Beatson on the substances used in ... ..	81	xlvi
———preparation and application of catgut ligatures ...	82	140
———antiseptic sutures ... ..	82	151
Lithotomy, Mr. Jordan on a new method of performing ... ..	81	222
Lithotripsy, Mr. Coulson's cases treated by Bigelow's method ... ..	81	241
———Mr. Hill's modified Clover's bottle for Bigelow's operation ...	81	238
———Mr. Smith on Bigelow's operation ... ..	81	230
———Mr. Teevan on Bigelow's operation ... ..	82	173
———Prof. Buchanan on ... ..	81	228
———Prof. Stokes's case treated by Bigelow's method ... ..	81	245
———Sir H. Thompson on Bigelow's operation ... ..	81	235
———Sir H. Thompson's modified bottle for Bigelow's operation ...	81	237
———at one or more sittings, Sir H. Thompson on ... ..	79	264
———at one or more sittings, Mr. Cadge on ... ..	79	268
Liver, Dr. Pavy on the, as essentially a sugar-assimilating organ ...	78	134
———Mr. Budd on amyloid degeneration of the ... ..	80	56
———disease, Dr. Goolden on sulphate of manganese in ... ..	78	340
Lupus, Dr. Balmanno Squire on linear scarification in ... ..	82	260
———Dr. Hall's cases treated successfully by carbolic acid ... ..	82	262
———Mr. Hutchinson on the causes and varieties of ... ..	82	253
———Mr. Hutchinson on the treatment of ... ..	82	257
———erythematodes, Dr. McCall Anderson on iodide of starch in ...	82	258
———erythematosis, Mr. Hutchinson on ... ..	82	254
———vulgaris, Mr. Hutchinson on ... ..	82	255
Malaria, Dr. Sullivan on its action on the system ... ..	78	48
Malaria and ague, Mr. Norbury on ... ..	78	51
Malarial poisoning, Dr. Vinkhuysen on quinetum in ... ..	77	325
Malt infusion as a diastatic agent, Dr. Roberts on ... ..	81	109
———preparations, Dr. Roberts on the administration of with food ...	81	109
Mammary epithelial tumours, British Medical Journal on ... ..	81	330
———glandular tumours, Sir J. Paget on ... ..	79	338
———irritation, Dr. Miller on a new preparation for allaying ..	77	321



	<i>Vol.</i>	<i>Page.</i>
Mammary tumors, Dr. Gross on the diagnosis of ... ..	82	301
Manganese, sulphate of, Dr. Goolden on its use in liver disease... ..	78	340
Mania, Mr. Gill on the use of hyoscyamine in ... ..	77	328
Marine lint, Dr. Snow on as an antiseptic dressing ... ..	81	162
Marsh fever, Dr. Sullivan on ... ..	78	41
Martin's rubber bandages, Dr. Ogilvie Will on the uses and application of	79	226
————— Mr. Clutton on the value of ... ..	81	282
————— Mr. McGill on the treatment of chronic ulcers by	80	226
————— solid-rubber bandage, uses of various thicknesses of ... ..	79	240
Measles, Dr. Barker on salicylic acid as a prophylactic against ... ..	80	xvi
Medication of nasal and other regions, Dr. Woakes's medicated wools for	82	xxiii
Medicinal and expectant treatment of diseases, Dr. Bristowe on the ... ..	81	33
Membrana tympani, Dr. M'Keown on treatment of relaxation of the ... ..	82	233
Menorrhagia, Dr. Matthews Duncan on the treatment of ... ..	82	292
————— Dr. Riddell on nitrite of amyl in a case of ... ..	80	293
————— ovarian, Dr. Meadows on ... ..	80	252
Menstruation, irregular, Dr. Phillips on picrotoxine in ... ..	81	98
Menthol, a new antiseptic ... ..	80	xciv
————— as an antiseptic and antineuralgic, Mr. Macdonald on ... ..	82	331
Mercurial fumigation, Mr. Duncan on ... ..	78	236
————— in syphilis, Mr. Lee on ... ..	77	255
Mercury, Dr. Boileau's cases of syphilis treated without the use of	80	196
————— Mr. Duncan on the modes of administering ... ..	78	234
Mesenteric disease, Dr. Thomas on koumiss in ... ..	77	xxvii
Metabolic contagia, Mr. Simon on ... ..	81	4
Metritis, cervical, Dr. Dabney on the use of ergotin in ... ..	81	lxvii
Metrorrhagia, Dr. Bennet on plugging the cervical canal in ... ..	80	249
————— M. Paul on hypodermic injection of ergotine in ... ..	78	1
Micro-organisms, Prof. Lister on their relation to disease ... ..	82	18
Microphone, Sir H. Thompson, on its use in sounding for stone ... ..	78	198
Migraine, Mr. Robson on nitro-glycerine in ... ..	82	344
Military surgery, Dr. Snow on antiseptic marine lint as a dressing in ... ..	81	162
Milk-curdling ferment, Dr. Roberts on ... ..	82	76
Minor surgery, Dr. Ogilvie Will on the antiseptic treatment of ... ..	77	177
————— surgical operations, Dr. Packard on primary anæsthesia of ether in	80	lii
Mitral stenosis, Dr. Dyce Duckworth on the etiology of ... ..	77	xxi
Morbus coxarius, Dr. Macnaughton Jones on ... ..	79	215
Morphia, Dr. Berkhart's cautions respecting injections of in asthma ... ..	82	74
————— Dr. Braithwaite on discontinuance of habitual injections of	79	106
————— Dr. Huchard on the hypodermic injection of in asthma ... ..	80	xxxix
————— Dr. Levinstein on morbid craving for ... ..	78	311
Mouth, Mr. Mills on administration of chloroform in operations about the	79	255
————— and throat, Prof. Annandale on position of head in operations on	81	211
Multiple linear scarifier, Dr. Squire's, for the treatment of lupus ... ..	82	261
Mydriatic properties of duboisia myoporoides, Dr. Ringer on the ... ..	77	340
————— properties of homatropin, Mr. Tweedy on the ... ..	82	lxix
Nævus, Dr. Brunton on the application of sodium ethylate in ... ..	79	251
————— Dr. Richardson on sodium ethylate as a caustic in ... ..	78	354
————— Mr. Bontflower's successful treatment of ... ..	77	334
————— Mr. Davies-Colley on the excision of ... ..	80	159
————— Mr. Walker's case treated by sodium ethylate ... ..	82	239
————— Mr. Walker's case treated by the actual cauterium ... ..	82	240
Nares, posterior, Dr. Spear's method of plugging the ... ..	82	xxvii

	<i>Vol.</i>	<i>Page.</i>
Nasal and aural cavities, Mr. Mason on foreign bodies in	77	251
— and aural polypi, Mr. Bartleet's snare for	77	182
— catarrh, Mr. Wilson on the use of iodoform in	81	xix
— polypus, Mr. Reginald Harrison on the treatment of	81	xix
Naso-pharyngeal disease, Dr. Woakes on iodoformed wool in	77	xxvi
— disease, Mr. Browne on iodoform in	77	xxv
— polypus, Mr. Savory on a case of	77	174
Nervous affections dependent upon a gouty habit, Dr. Reynolds on	77	64
— diseases, Dr. Bennett on electricity in the diagnosis of	81	77
— headache, Dr. Symes Thompson on	78	78
Neuralgia, Dr. MacLagan on salicin in	77	68
— Dr. Oulmont on aconitia in	81	87
— Dr. Ringer on tonga as a remedy for	81	85
— Mr. Macdonald on the use of menthol in	82	333
— facial, Dr. Abbot on salicylic acid and salicylate of soda in	82	xix
— facial, Dr. Vinkhuysen on quinetum in	77	324
— facial, M. Fereol on suphate of copper in	80	xxiii
— facial, Prof. Gubler on aconitin in	80	xxiii
— trigeminal, Dr. Massini on the use of gelseminum in	80	xxvi
Neuralgic headache, Dr. More on nitrite of amyl in	82	xix
Neurosial affections of the heart, Dr. Fothergill on	77	91
— and reflex affections of the heart, Dr. Fothergill on	79	109
Nictitation, Dr. Pearse on the use of belladonna in	82	lxix
Night-sweats of phthisis, Dr. Fothergill on the treatment of	78	88
— of phthisis, Dr. Murrell on atropia in the	80	84
— of phthisis, Dr. Murrell on oxide of zinc in the	80	xxxiv
— of phthisis, Dr. Murrell on picrotoxine as a remedy for	81	98
— of phthisis, use of belladonna in	80	xxxiii
Nitre-paper fumigation as an expectorant, Dr. Duckworth on	77	330
Nitrite of amyl, Dr. Riddell on the uses of	80	293
— Mr. Illingworth on its indiscriminate use in sea-sickness	80	xlii
— as an antagonist to chloroform	80	294
— in chloral poisoning, Dr. Coghill on	80	295
— in impending death from uterine hemorrhage, Mr. Kerr	81	334
— in neuralgic headache, Dr. More on	82	xix
— in prolonged syncope, Dr. O'Neill on	77	95
Nitro-glycerine, Mr. Martindale's preparations of in angina pectoris	80	xxix
— in migraine, asthma, and angina pectoris, Mr. Robson on	82	344
Nitrous oxide as an anæsthetic, Dr. Meymott Tidy on	79	352
Nutrition, Dr. Anderson on the phosphates in	78	334
— M. Dusart on calcium phosphate in	80	xli

Obstetric forceps, Dr. Bell on Tarnier's	79	303
— Dr. Duke's new tractor for	79	306
— Dr. Hamilton on the	78	241
— Dr. Johnston on their use at the Rotunda hospital	79	xlii
— Dr. Radford on the use of the long	79	301
— Editor of Med. Times and Gazette on the discussion on	80	273
— Editor of British Medical Journal on the discussion on	80	271
— Mr. Hilliard's new appliance for	81	335
— Prof. Simpson's modification of Sampson's	82	308
Obstinate constipation, Dr. Dunlop on a case of	81	117
Obstruction of bowels, Dr. Allbutt on	79	163
— Mr. Teale on exploration of the abdomen in	79	167
Oil silk, Dr. Keen's waterproof paper as a substitute for	82	lxxx



	<i>Vol.</i>	<i>Page.</i>
Oleate of lead in eczema, Dr. Sawyer on ... ..	81	288
— of mercury in chronic ringworm, Dr. Smith on ... ..	81	lviii
— of zinc in the treatment of eczema, Dr. Crocker on ... ..	79	299
— of zinc in the treatment of eczema, Dr. Sawyer on ... ..	80	225
Operations about the mouth and throat, Prof. Annandale on ... ..	81	211
Ophthalmia, gastric, Mr. Vernon on the treatment of so-called ... ..	77	241
— gonorrhœal, Dr. Gunn on the treatment of ... ..	82	lxv
— gonorrhœal, Dr. Wolfe on the treatment of ... ..	82	229
— gonorrhœal, Mr. Bader's treatment of ... ..	82	230
— neonatorum, Dr. Wolfe on the treatment of ... ..	82	225
— sympathetic, Mr. Lawson on ... ..	82	214
Opium, Dr. Lloyd on sudden discontinuance of after daily use for years ... ..	80	297
— M. Pecholier on the uses of ... ..	82	327
— poisoning, Dr. Eddison on subcutaneous injection of atropine in ... ..	80	298
— poisoning, Dr. Fothergill on atropine in a case of ... ..	77	xvi
Organic stricture dilators, Mr. Pemberton's ... ..	77	219
— why most common in bulbous urethra, Mr. Gould on ... ..	77	213
Os and cervix uteri, tupelo tents for dilating the ... ..	77	261
Os uteri, Dr. Stephenson on digital dilatation of in labour ... ..	78	246
Osseous deformities, Dr. Macewen on antiseptic osteotomy in ... ..	79	209
Osteotomy, subcutaneous, Mr. Adams on ... ..	81	198
— subcutaneous, Mr. Gant on ... ..	81	201
— subcutaneous, in children, Mr. Parker on ... ..	81	206
Otitis media, Dr. Eldridge on the use of ergotine in ... ..	81	lxvi
Ovarian dropsy, Mr. Spencer Wells on the diagnosis of ... ..	78	287
— cyst, Mr. Wells on tapping... ..	78	294
— menorrhagia, Dr. Meadows on bromide of potassium in ... ..	80	256
— tumour and ascites, Mr. Wells on the diagnosis between ... ..	78	287
— tumours, Dr. Thornton on diagnosis of ... ..	77	288
Ovariectomy, Dr. Whiteside Hime on ... ..	79	329
— Dr. Whiteside Hime on the antiseptic method in ... ..	79	332
— Dr. Thorburn's clinical observations on ... ..	77	306
— Mr. Doran on ligature of pedicle in ... ..	77	300
— Mr. Knowsley Thornton on antiseptic ... ..	80	270
— Mr. Thornton's iced-water cap for lowering temperature in ... ..	78	304
— Mr. Thornton on the treatment of the pedicle in ... ..	82	293
— Mr. Thornton on the silk ligature for securing the pedicle ... ..	77	294
— Mr. Lawson Tait's mode of circular constriction of pedicle in ... ..	79	333
— "Tait's Knot" for ... ..	81	336
— Mr. Wells on the mode of performing the operation ... ..	78	294
— Mr. Wells on relative advantages of the clamp and ligature ... ..	78	301
— Mr. Wells on the treatment of adhesions of the pedicle in ... ..	78	296
— Mr. Wells on torn adhesions in ... ..	78	302
— Prof. Nussbaum on the antiseptic performance of ... ..	80	lxxvi
— Prof. Nussbaum on the treatment of the pedicle in ... ..	80	lxxviii
— at the Samaritan Hospital, Mr. Spencer Wells on ... ..	77	298
Oxalate of cerium in cough, Dr. Cheesman on ... ..	82	xxii
— in pregnant sickness, Dr. Image on ... ..	78	270
Oxide of zinc in chronic eczema, Dr. Fisher on ... ..	81	liii
— in infantile diarrhœa, Dr. Renton on ... ..	77	103
Ovum and placenta forceps, Dr. Hickinbotham on a new ... ..	79	341
Ozœna, Mr. Lennox Brown on salicylic acid in ... ..	80	xev
— Mr. Lennox Brown on the treatment of ... ..	82	xxiv
Ozone as a disinfectant, Dr. Day on ... ..	80	xciii

	<i>Vol.</i>	<i>Page.</i>
Pain as a symptom of fracture, Mr. Duncan on ... ..	80	117
Painful sitting, Dr. Matthews Duncan on ... ..	79	323
Palmar arch, superficial, Mr. Bellamy on acupressure in wounds of	78	182
Palpitation, Dr. Milner Fothergill on ... ..	79	112
Pancreatic digestion of milk, Dr. Roberts on the... ..	82	82
————— juice, Dr. Roberts on the medicinal equivalents of ...	80	xc
Paper lint, Mr. Chiene on ... ..	79	224
Paracentesis abdominis by gradual drainage, Dr. Southey on ...	78	193
————— abdominis and thoracis by capillary tubes, Dr. Goodhart on	78	189
Paraffin splints, Dr. Macewen on the advantages of ... ..	78	150
————— Dr. Macewen on the mode of preparing ... ..	82	128
Parallelism of lower extremities in hip diseases and injuries, Mr. Bryant	81	186
Paralysis of bladder, M. Sutton on hypodermic injection of ergot in	78	xxxii
Parasitic affections, Dr. Smith on chrysophanic acid in ... ..	80	lvii
Parasiticide, Dr. Cottle on iodoform as a ... ..	77	337
Parturition, Dr. Carriger on the use of ipecacuanha in ... ..	80	259
Pedicle in ovariectomy, Dr. Thorburn on treatment of ... ..	77	308
————— Mr. Knowsley Thornton on the treatment of ... ..	82	293
————— Mr. Knowsley Thornton on use of silk ligature for	77	294
————— Mr. Doran on ligature of ... ..	77	300
————— Mr. Spencer Wells on treatment of adhesions of	78	296
Pelvis, Dr. Duncan on relaxation of the joints of the ... ..	79	327
Pepsin as a digestive ferment, Dr. Roberts on ... ..	80	xc
Peptonised beef-tea, Dr. Roberts on the preparation of ... ..	82	86
————— gruel, Dr. Roberts on the preparation of ... ..	82	85
————— milk, Dr. Roberts on the preparation of ... ..	82	84
————— milk-gruel, Dr. Roberts on the preparation of ... ..	82	86
————— soups, jellies, blancmanges, Dr. Roberts on ... ..	82	86
Perchloride of iron as a styptic and caustic, Dr. Duncan on ... ..	79	313
Perineal section, Mr. Morgan's case of stricture treated by ... ..	79	230
Periostitis and endostitis, acute, Mr. Bryant on the treatment of ...	80	134
Perspiration, Dr. Ringer on its influence on febrile temperature ...	78	53
Pessaries, Dr. Bantock on their use and abuse ... ..	77	262
————— Dr. Bantock on the mode of application of ... ..	77	268
————— Dr. Matthews Duncan on ... ..	77	xliv
Pessary-catheter for bladder affections, Mr. Harrison's ... ..	77	218
Phagadenic ulcers treated by prolonged immersion, Mr. Cooper on ...	80	202
Phalangeal joints, Mr. Prideaux on the excision of ... ..	78	145
Phantom stricture of rectum, Dr. Van Buren on ... ..	81	124
Pharyngitis, Dr. Dabney on the use of ergotin in ... ..	81	xx
Phlegmasia dolens, Dr. Barnes on ... ..	80	69
Phlyctenular ulcers, Dr. Gunn on the treatment of ... ..	82	lxviii
Phosphatic concretions, Sir H. Thompson on ... ..	77	203
————— deposits, Sir H. Thompson on ... ..	77	206
————— deposits, Sir H. Thompson on prevention of ... ..	77	209
————— deposits in the bladder cysts, Sir H. Thompson on ...	77	203
Phosphates in nutrition, Dr. Anderson on the ... ..	78	334
Phosphorus and chrysophanic acid in psoriasis, Dr. Squire on ...	77	195
Phthisis, Dr. Allbutt on the climate of Davos-Platz ... ..	80	86
————— Dr. Allbutt on its treatment at Davos-Platz ... ..	78	95
————— Dr. Anderson on the causes and treatment of ... ..	78	337
————— Dr. Cheesman on oxalate of cerium in the cough of ... ..	82	xxiii
————— Dr. Hassall on the climate of Davos-Platz ... ..	80	89
————— Dr. Milton on the use of petroleum in ... ..	81	xx
————— Dr. Monro on inhalation of carbolic acid in pulmonary ...	82	57
————— Dr. Milner Fothergill on the treatment of early ... ..	78	88
————— Dr. Murrell on the use of atropia in the night sweats of ...	80	84
————— Dr. Murrell on the use of oxide of zinc in the night sweats of	80	xxxiv
————— Dr. Murrell on picrotoxine in the night sweats of ... ..	81	98
————— Dr. Neale on chloride of calcium in ... ..	82	xxvi
————— Dr. Saundby on codeia as a sedative in night-cough of ...	79	353
————— Dr. Thomas on the use of koumiss in the early stages of ...	77	xxvii
————— Dr. Thompson on drug-smoking in night-cough of ... ..	79	357
————— Dr. Thorowgood on climatic and atmospheric influences on	81	101



	<i>Vol.</i>	<i>Page.</i>
Phthisis, Dr. Waters on temperature in ... ..	81	92
———— Dr. Yeo on chaulmoogra oil in ... ..	79	134
———— Mr. Gasquet on the use of belladonna in ... ..	80	309
———— on the use of belladonna in the night sweats of ... ..	80	xxxiii
Piles, Dr. Smith on the carbolic acid treatment of ... ..	80	182
Picrotoxine, Editor of British Medical Journal on medicinal uses of ... ..	81	97
Pilocarpin, Dr. Berkhart on its use in asthma ... ..	82	63
———— Schmitz on its power of reproducing hair ... ..	80	lv
Pitting after small-pox, Dr. Clark's method of preventing ... ..	82	lxiii
———— Dr. Schwimmer's method of preventing ... ..	82	lxiii
Placenta, Dr. Elder on immediate delivery of in natural labour ... ..	81	lxviii
Placenta prævia, Dr. Barnes on the state of the uterus in ... ..	81	309
———— Dr. Bell on the cause and treatment of ... ..	78	264
Plaster jacket, Dr. Miller's, for spinal curvature in recumbent posture ... ..	81	208
———— for spinal curvature in recumbent posture, Dr. Walker on ... ..	79	175
Plaster-of-Paris bandages in the treatment of club-foot, Dr. Ogston on ... ..	79	191
———— splint for fractures, Dr. Coskery's ... ..	80	li
———— splints for fractures of the leg, Mr. Croft on ... ..	78	134
Pleuritic effusion, Dr. Wilks on ... ..	80	79
Plugging the posterior nares, Dr. Spear's method of ... ..	82	xxvii
Pneumonia, Dr. Dobie on the influence of aconite in ... ..	80	74
———— Dr. Rabagliati on the use of aconite in ... ..	80	76
———— Dr. Wells on the use of ergot in ... ..	80	xxxvi
———— chronic, Dr. Berkart on subcutaneous injection of pilocarpin ... ..	82	71
Podophyllin, Dr. Dobell's formula for ... ..	80	xli
———— Dr. Rutherford on the action of ... ..	81	133
Polypi, aural and nasal, Mr. Bartleet's snare for ... ..	77	182
Polypus, nasal, Mr. Harrison's treatment of ... ..	81	xix
———— naso-pharyngeal, Mr. Savory on a case of ... ..	77	174
———— uteri, Dr. Fleetwood Churchill's cases of ... ..	77	271
———— uterine fibrous, Dr. Matthews Duncan on ... ..	82	275
Popliteal aneurism, Mr. Hewetson on Esmarch's bandage and digital compression in ... ..	80	157
Porte-vaccine case, Messrs. Salt and Son's ... ..	82	349
Port-wine mark, Dr. Balmanno Squire's improved treatment of ... ..	81	298
Post-partum hemorrhage, Dr. Atthill on hot-water injections in ... ..	81	337
———— hemorrhage, Dr. Atthill on hot-water injections in ... ..	77	316
———— hemorrhage, Dr. Bradley on the treatment of ... ..	78	252
———— hemorrhage, Dr. Weir on the prophylactic treatment of ... ..	78	260
———— hemorrhage, Dr. Whitwell on hot water injections in ... ..	78	258
———— hemorrhage, Mr. Jones on injection of hot water in ... ..	80	lxxix
Pregnant sickness, Dr. Image on oxalate of cerium in ... ..	78	270
Pressure, Mr. Gamgee on wound treatment by ... ..	79	243
———— as a remedy in cancer, Dr. Arnott on ... ..	80	50
———— continuous, in the treatment of sprains, Mr. Fox on ... ..	82	134
———— forceps, Mr. Spencer Wells on their use in surgery ... ..	80	148
Privy disinfection, Mr. Eckstein on chloride of lime for ... ..	80	xcv
Progressive pernicious anæmia, Dr. Mackenzie on ... ..	79	42
Prolapsus ani, Mr. Henry Smith on the clamp and cautery in ... ..	81	213
———— recti, Mr. Henry Smith on the clamp and cautery in ... ..	77	xxix
———— recti, M. Vidal's treatment of ... ..	82	xxxii
———— uteri, Dr. Bantock on the use of pessaries in ... ..	77	264
Prurigo, M. Flieschmann on subcutaneous injection of carbolic acid in ... ..	80	lviii
Pruritus, Dr. Auerbach on balsam of Peru in ... ..	81	liv
Psoriasis, Dr. Adams on the efficacy of chrysophanic acid in ... ..	78	215
———— Dr. Adams on the use of alizarin in ... ..	78	224
———— Drs. Besnier and Arragon on the use of pyrogallie acid in ... ..	80	lix
———— Dr. Crocker on the use of thymol in ... ..	77	201
———— Dr. Farquharson on the use of liquor arsenicalis in ... ..	82	242
———— Dr. Sangster's cases treated by chrysophanic acid ... ..	77	lii
———— Dr. Squire on chrysophanic acid and phosphorus in ... ..	77	195
———— Dr. Will on the efficacy of chrysophanic acid in ... ..	78	209
———— M. Priestmann on the treatment of ... ..	81	lvi
———— Prof. Maynard on the diagnosis and treatment of ... ..	81	289

	<i>Vol.</i>	<i>Page.</i>
Puerperal coagula, intra-uterine, Dr. Matthews Duncan on ...	82	272
——— eclampsia with rigid os, Mr. Fearnley's case of ...	79	311
——— fever, Dr. Atkinson on boracic acid in the treatment of ...	81	lxxv
——— fever, Dr. Matthews Duncan on ...	82	277
——— fever and scarlatina, typhoid, diphtheria, and erysipelas, Dr Griffith on the unity of poison in ...	80	25
——— fever, report of Berlin Obstetrical Society on ...	78	281
——— septicæmia and specific zymotic diseases, Dr. Strange on ...	78	271
Pulmonary diseases, Dr. Rudi's treatment of at Davos ...	78	96
——— diseases, Dr. Thorowgood on atmospheric and climatic influence ...	81	100
Purulent conjunctivitis, Dr. Wolfe on the treatment of ...	82	229
Putrid expectoration, Ed. of Medical Times on inhalation treatment of ...	81	89
Pyæmia, Dr. Thompson on the diagnosis of ...	81	55
——— or non-specific blood-poisoning, Mr. Duggan on ...	82	36
——— and septicæmia, Dr. Matthews Duncan on ...	82	281
Pyrexin or pyrogen, Dr. Drysdale and Dr. Murrell on ...	82	10
Pyrogallic acid, Drs Besnier and Arragon on its use in psoriasis ...	80	lix
——— Dr. Vesey on its use in internal hemorrhages ...	79	133
Quebracho, Dr. Berkhart on the liquid extract of, in asthma ...	82	75
Quinetum, Dr. Vinkhuysen on the therapeutical value of ...	77	324
——— sulphate, Dr. Hollis on its use in ague... ..	80	xi
Quinine, Dr. Batterbury on milk as a vehicle for ...	78	lxii
——— Mr. Nunn on its use in chronic irritation of the bladder ...	77	217
——— salicylate, Dr. Hewan on its use in rheumatism ...	81	lxxix
Radius, Dr. Will on complete dislocation of head of, forwards ...	80	122
Rectal fistulæ, Mr. Reeves's treatment of by immediate ligation ...	78	188
Rectum, Dr. Griffith's case of loaded and blocked ...	80	310
——— Dr. Van Buren on phantom stricture of the ...	81	124
——— Dr. Lowson's case of stricture of, treated by excision ...	79	261
——— M. Vidal on subcutaneous injection of ergotine in prolapse of ...	82	xxxii
Re-inversion, uterine, Dr. Atthill on ...	80	238
——— Dr. Aveling on ...	80	245
Relaxation of the membrana tympani, Dr. M'Keown's treatment of ...	82	233
——— of the pelvic symphyses, Dr. Matthews Duncan on ...	79	327
Renal calculus, Mr. Pick on the diagnosis of ...	81	217
Respirator inhaler, Dr. Roberts's ...	81	89
Retention of fæces, Dr. Matthews Duncan on ...	81	115
——— for twelve months, Dr. Dunlop's case of ...	81	117
Retroflexion of unimpregnated uterus, Dr. Braithwaite on treatment of ...	77	310
Retroversion of uterus with menorrhagia, Hodge's pessary in ...	77	265
Rheumatic affections due to malaria, Dr. Vinkhuysen on quinetum in ...	77	326
——— gout, Dr. Drew on omission of soda-salts and alcohol in... ..	79	37



	<i>Vol.</i>	<i>Page.</i>
Rheumatic headache, Dr. Symes Thompson on ... ..	78	78
———— pericarditis and endocarditis treated by salicylate of ammonia	77	45
Rheumatism, acute, Dr. Hewan on its treatment by salicylate of quinine	81	lxxix
———— Dr. Maclagan on salicin and salicylic acid in ...	80	41
———— Dr. Ord on the graduated bath in ... ..	78	32
———— Dr. Sharkey on salicylate of soda in ... ..	78	63
———— Dr. Sinclair on the treatment of ... ..	81	70
———— Dr. Southey on ... ..	79	33
———— Dr. Southey on the salicylate of soda treatment of	81	67
———— Dr. Squire on salicin and salicylic acid in ...	81	74
———— Dr. Young on the use of the salicylates in ...	82	46
———— Editor of Medical Times on the salicylates in ...	82	44
Ringworm, Dr. Cottle on the use of croton oil and salicylic acid in ...	82	245
———— Dr. Liveing on the peculiarities and treatment of ...	81	291
———— Dr. A. Smith on the treatment of, at Christ's Hospital ...	81	lvii
———— chronic, Dr. A. Smith on oleate of mercury in ... ..	81	lviii
———— disseminated variety, Dr. Smith's treatment of ... ..	81	lix
Rodent ulcer of skin, Dr. Squire's treatment by erosion ... ..	78	359
Rooms for surgical operations, Mr. Thompson's method of constructing	77	344
Rubber bandages, Mr. Clutton on their use for ulcers ... ..	81	282
Ruptured urethra, Mr. Bradley's case of ... ..	79	286
Rupture of the uterus, Mr. Sincock's case of ... ..	82	290
Saemisch's operation in hypopion keratitis, Dr. Emrys-Jones on ...	79	295
Salicylate of soda, Dr. Sharkey on its use in acute rheumatism ...	78	63
———— of soda treatment of acute rheumatism, Dr. Southey on ...	81	67
———— of quinine, Dr. Hewan on its use in rheumatism ... ..	81	lxxix
Salicylates in acute rheumatism, Dr. Greenhow on ... ..	82	44
———— in acute rheumatism, Dr. Young on ... ..	82	46
———— in acute rheumatism, Medical Times and Gazette on ...	82	44
———— in sciatica and neuralgia, Dr. Abbot on the ... ..	82	xix
Salicin, Dr. Maclagan on the treatment of cold in the head by ...	77	95
———— Dr. Maclagan on its use in neuralgia ... ..	77	68
———— and salicylic acid in acute rheumatism, Dr. Maclagan on ...	80	41
———— and salicylic acid in acute rheumatism, Dr. Squire on ...	81	74
Salicylic acid, Dr. Squire on the germicide and antipyretic effects of	80	xvii
———— Mr. Prideaux on as an antiseptic and an antipyretic ...	78	59
———— Prof. Kohler on the therapeutic properties of ... ..	77	338
———— and its congeners, Dr. Erskine Stuart on ... ..	77	44
———— as a prophylactic against scarlatina, measles, &c. ...	80	xvi
———— in scarlet fever and diphtheria, Mr. Pownall on ...	80	xv
Sanitary work, Dr. Carpenter on the canons of ... ..	81	339
Sapræmia after labour, Dr. Matthews Duncan on the treatment of ...	82	279
Saw and knife for subcutaneous osteotomy, Salt and Son's ... ..	79	359
Sayre's treatment of spinal disease, Mr. Berkeley Hill on ... ..	79	170
Scabies, Dr. Liveing on the diagnosis and treatment of ... ..	81	295
———— Dr. Sang on the diagnosis and treatment of ... ..	82	249
Scalp, Mr. Erichsen on reparative power in injuries of the ... ..	77	164
Scarlet fever, Dr. Murchison on the incubation period of ... ..	79	3
———— Mr. Evans on the treatment of ... ..	79	5
———— and diphtheria, Mr. Pownall on the use of salicylic acid in	80	xv
———— and septicæmia, Mr. Ffolliott on ... ..	79	10
Scarlatina, Dr. Barker on salicylic acid as a prophylactic against ...	80	xvi
———— anginosa, Dr. Squire on the use of salicylic acid in ...	80	xvii

	<i>Vol.</i>	<i>Page.</i>
Scarlatina and puerperal fever, typhoid, diphtheria, and erysipelas, Dr. Griffith on the unity of poison in ... ..	80	25
— complicated with affections of the joints and of the heart, Dr. Fairbank's cases ... ..	80	17
— sine eruptione, Dr. Fairbank's cases of ... ..	80	15
— surgical, Mr. Howse on an epidemic of in Guy's Hospital ... ..	80	20
Sciatica, Dr. Abbot on salicylic acid and salicylate of soda in ... ..	82	xix
— Dr. Comegys on hypodermic injection of sulphuric ether in ... ..	80	xxv
— Dr. Starr on hypodermic injection of atropia in ... ..	80	xxv
Sclerosis, spinal, Dr. Buzzard on the diagnosis of ... ..	78	68
Sclerotomy, Dr. de Wecker on the treatment of glaucoma by ... ..	81	267
— Mr. Swanzy on the treatment of glaucoma by ... ..	81	271
Scurvy, Dr. Anderson on the causes of ... ..	78	335
Scybala, Dr. Matthews Duncan on ... ..	81	115
Sea sickness, Mr. Illingworth on indiscriminate use of nitrite of amyl in ... ..	80	xlii
Sebaceous tumours of the scalp, Mr. Erichsen on ... ..	77	161
Sedative, Dr. Saundby on codcia as a ... ..	79	353
Sepsin and pyrexin, Dr. Drysdale on the preparation of ... ..	82	11
Septicæmia, Mr. Duggan on ... ..	82	36
— and pyæmia, Dr. Matthews Duncan on ... ..	82	280
— and scarlet fever, Mr. Ffolliott on ... ..	79	10
— puerperal, Dr. Strange on ... ..	78	271
Septic blood-poisoning in the practice of surgery, Mr. Savory on ... ..	80	107
Seton, Dr. Austin on its use in chronic bursitis ... ..	80	134
Sick headache, Dr. Symes Thompson on ... ..	78	80
Sickness of pregnancy, Dr. Image on oxalate of cerium in ... ..	78	270
Sims' speculum, Dr. Goelet's form of self-retaining ... ..	80	277
Skin-diseases, Dr. Crocker on thymol in ... ..	77	199
— Dr. Farquharson on the use of arsenic in ... ..	82	240
Sleeplessness, Dr. Ainslie Hollis on its treatment ... ..	77	71
— Dr. Sawyer on the causes and cure of ... ..	78	83
Small-pox, Dr. Clark's method of preventing pitting ... ..	82	lxxiii
— Dr. Schwimmer's method of preventing pitting ... ..	82	lxxiii
— Mr. Farr on turpentine as a local application in ... ..	77	xiv
— Mr. Paterson on the use of carbolic acid ointment in ... ..	78	xlvi
— official introduction of vaccination with calf-lymph ... ..	82	lxxix
Smoking, Dr. Berry on central amblyopia from ... ..	82	220
Snare for aural and nasal polypi, Mr. Bartleet's ... ..	77	182
Sneezing, Mr. Bradley's method of curing fits of ... ..	81	xxii
Sodium ethylate, Dr. Brunton on the treatment of nævus by ... ..	79	251
— Dr. Richardson on its use as a caustic ... ..	78	354
— Dr. Richardson on the uses of ... ..	80	322
— Mr. Walker's case of nævus cured by ... ..	82	239
Sore nipples, treatment of ... ..	81	lxxv
— throat, Dr. Bowles on some varieties of ... ..	79	27
Sounding for stone in the bladder, Mr. Teevan on ... ..	97	274
Sound, Mr. Teevan on Mercier's method of introduction when impassable ... ..	79	277
Spasmodic dysmenorrhœa, Dr. Matthews Duncan on ... ..	80	lxxxix
Speculum, Dr. Duke's modification of Sims's duck-bill ... ..	81	336
— Dr. Goelet's modification of Sims' ... ..	80	277
— vaginæ, Salt's new touch and sight ... ..	80	278
Sphygmograph, Dr. Dudgeon's pocket ... ..	82	351
Sphygmophone, Dr. Richardson on the ... ..	80	72
Spinal curvature, Mr. Berry's new treatment of ... ..	80	134
— disease, Dr. Miller's method of applying a plaster-of-Paris jacket in the recumbent posture ... ..	81	208
— Dr. Walker's treatment by a plaster jacket applied in the recumbent posture ... ..	79	175
— Mr. Berkeley Hill's cases of cured by Sayre's jacket ... ..	79	170
— Mr. Power's method of preparing Sayre's plaster jackets ... ..	79	xxxv
— improved tripod and pulleys for Sayre's treatment of ... ..	79	360
— and injuries, Mr. Wood on double extension in cases of ... ..	82	112
— sclerosis, Dr. Buzzard on some points in the diagnosis of ... ..	78	68
Spleen, Dr. Sullivan on the influence of malaria on the ... ..	78	51



	<i>Vol.</i>	<i>Page.</i>
Splint, Mr. Coppinger's, for antiseptic excision of knee-joint ...	82	110
—— Mr. Stokes's, for deformities, &c., of the lower extremities ...	79	200
Splints, Dr. Thompson on india-rubber air or water-pads for ...	82	133
—— for chronic affections of joints in childhood, Mr. Marsh on ...	82	118
—— paraffin, Dr. Macewen on the method of preparing ...	82	128
—— paraffin, Dr. Macewen on ...	78	150
Sprains, Dr. Will on the advantages of the elastic bandage in ...	79	230
—— Mr. Fox on the treatment of ...	82	134
Spontaneous arrest of bleeding from divided vessels, Mr. W. Jones on ...	77	170
Spray apparatus with hand and foot bellows, Messrs. Salt and Son's new ...	78	364
—— inhalations, Dr. Adams's improved apparatus for ...	80	317
Starch digestion, Dr. Roberts on the therapeutics of ...	81	107
Startin's mixture, Dr. Bulkeley on its use in cutaneous congestion ...	82	lvii
Starvation and consumption, conflicting medical opinions in cases of ...	78	337
Sterility and intra-uterine medications, Dr. Playfair on ...	81	323
Stethoscope, Messrs. Salt and Son's new aluminium telescopic ...	77	332
Stimulant, Dr. Carpenter on alcohol as a ...	78	322
Stimulants in health and in disease, Sir R. Christison on ...	80	xviii
Stitches in cleft palate operations, Dr. Woakes's instrument for ...	82	170
—— of relaxation, Dr. Ogilvie Will on ...	80	155
Stomach, Mr. Bell on the use of eucalyptus in disease of the ...	77	329
Stone in the bladder, Mr. Cadge on the treatment by lithotrity ...	79	268
—— Mr. Jordan on a method of performing lithotomy for ...	81	222
—— Mr. Teevan on the importance of early diagnosis ...	79	273
—— Mr. Teevan on recent progress in the treatment of ...	82	172
—— Prof. Buchanan on importance of early detection ...	81	226
—— Sir H. Thompson on the treatment by lithotrity ...	79	264
—— Sir H. Thompson on use of the microphone in sounding for ...	78	198
—— in the kidney, Mr. Pick on the diagnosis of ...	81	217
Strabismus as a result of small corneal opacities, Mr. Vernon on ...	77	243
Strangulated herniæ reduced "en bloc," Prof. Spence on ...	80	175
Stricture, intestinal, Dr. Coupland and Mr. Morris on ...	77	183
—— of rectum, Dr. Lawson's case treated by excision ...	79	261
—— of urethra, Dr. Gouley's improvement of Coulson's operation of external urethrotomy in ...	79	279
—— Dr. Macdougall on John Hunter's operation in impassable ...	79	290
—— Dr. Nesbitt's new application of the gum elastic catheter in ...	80	xliv
—— Mr. Atkinson on ...	77	223
—— Mr. Bartleet's new graduated dilator for ...	77	222
—— Mr. Bradley on the treatment of ...	79	285
—— Mr. Bradley on gradual dilatation of ...	79	288
—— Mr. Bradley on internal urethrotomy in ...	79	289
—— Mr. Bradley on immediate dilatation in ...	79	289
—— Mr. Cooper Forster on the causes of ...	78	202
—— Mr. Cooper Forster on the symptoms of ...	78	204
—— Mr. Cooper Forster on the treatment of ...	78	205
—— Mr. Gay on catheterism in impervious ...	78	343
—— Mr. Gay on catheterism on physiological principles ...	79	283
—— Mr. Gould on why most common in bulbous part of urethra ...	77	213
—— Mr. Harrison on the prevention of ...	82	201
—— Mr. Heath on the immediate treatment of ...	82	197
—— Mr. Hill on gradual dilatation in ...	81	xxxvi
—— Mr. Hill on dilatation by continuous tying-in ...	81	xxxviii
—— Mr. Hill on how to pass a sound ...	81	xxxvii
—— Mr. Hill on how to pass flexible bougies ...	81	xxxvii
—— Mr. Hill on external urethrotomy ...	81	xl
—— Mr. Hill on internal urethrotomy ...	81	xxxix
—— Mr. Lane on the immediate treatment of ...	82	199
—— Mr. Macnamara on the immediate treatment of ...	82	198
—— Mr. Morgan on external urethrotomy in ...	79	278

	<i>Vol.</i>	<i>Page.</i>
Stricture of urethra, Mr. Pemberton's dilators for ... ..	77	219
————— Mr. Simon on the modified perineal operation for ... ..	82	194
————— Mr. Simon on the treatment of ... ..	82	190
————— Mr. Teevan on the manipulative treatment of ... ..	81	247
————— Mr. Teevan on the operative treatment of ... ..	81	250
————— Sir H. Thompson on progress in the treatment of ... ..	82	180
Strychnia, Dr. Brunton on the value of as a tonic ... ..	78	338
Stumps, Dr. Garveau's treatment of after amputation ... ..	77	xlvi
Styptic, Dr. Duncan on perchloride of iron as a ... ..	79	313
Subcutaneous osteotomy, Mr. Adams on ... ..	81	198
————— Mr. Gant on ... ..	81	201
————— Salt and Son's new saw and knife ... ..	79	359
————— in children, Mr. Parker on ... ..	81	206
————— syringe, Salt and Son's new miniature ... ..	79	358
Sub-involution of the uterus, Dr. J. Braithwaite on the treatment of ... ..	82	270
Sugar in urine, Dr. Birt's method of testing for ... ..	77	341
————— Dr. Pavy on the tests for ... ..	77	113
————— Dr. Ralfe on copper test capsules for detecting ... ..	82	xxxv
Sulphate of copper in croup, Dr. Crichton's use of ... ..	79	150
————— of manganese, Dr. Goolden on its use in liver disease ... ..	78	340
————— of zinc, Dr. Day on its use in chorea ... ..	80	58
Sulphite of soda as an internal antiseptic, Prof. Polli on ... ..	81	176
Sulphites, Dr. Burman on the antiseptic value of the ... ..	81	176
Sulphur as a topical application in diphtheria, Mr. Stuart on ... ..	79	26
Sulphuric acid, Dr. Matthews Duncan on its use in menorrhagia ... ..	82	292
Sunstroke, Dr. Dedrickson on its treatment with ergot ... ..	78	73
Surgeon's new portable dressing case, Salt and Son's ... ..	79	363
Surgical dressings, Dr. Snow on antiseptic marine lint ... ..	81	162
————— Mr. Barker on dry cotton-wool permanent dressings ... ..	81	xlvi
————— Mr. Gamgee's absorbent and antiseptic ... ..	81	xlvi
————— Prof. Spence's simple method of dressing stumps ... ..	81	xlvi
————— hammock or invalid lift, Messrs. Salt and Son's ... ..	78	366
————— operations, Mr. Keetley on hot water as an hemostatic in ... ..	79	254
————— statistics, Dr. Bishop on Prof. Spence's article on ... ..	81	174
————— Editor of British Medical Journal on ... ..	82	137
————— and the antiseptic system, Prof. Lister on... ..	81	170
————— and the antiseptic system, Prof. Spence on ... ..	81	163
Suspensory bandage, Mr. Keetley on a new ... ..	80	xlvi
Sutures, Dr. Beatson on antiseptic adhesive plaster as a substitute for ... ..	82	151
————— Dr. Beatson on carbolised catgut ... ..	82	155
————— Dr. Beatson on horse-hair ... ..	82	155
————— Dr. Beatson on silver-wire ... ..	82	151
————— Dr. Ogilvie Wills's improved button-suture ... ..	80	156
————— Dr. Vogel's new elastic ... ..	80	liii
————— Mr. Walters on silkworm or fishing gut for ... ..	80	161
Sweating of the feet, Dr. Thin on the use of boracic acid solution in ... ..	82	lxii
Sympathetic ophthalmia, Mr. Lawson on the treatment of ... ..	82	214
Syncope, prolonged, Dr. O'Neill on nitrite of amyl in ... ..	77	95
Syphilis, Dr. Boileau on its treatment without mercury ... ..	80	196
————— Dr. M'Call Anderson on iodide of starch in old-standing cases ... ..	82	259
————— Mr. Duncan on the modes of administering mercury ... ..	78	234
————— Mr. Lee on the calomel vapour bath in ... ..	77	255
Syphilitic sores, Dr. Sheen on the use of iodoform for ... ..	80	314
————— Mr. Cooper on their treatment by immersion ... ..	80	201
————— ulceration, Dr. Cottle on the use of iodoform in ... ..	77	337
Syringe, Mr. Greenway's new form of vaginal ... ..	80	264
Syringes and pumps, Weiss and Son's new piston for ... ..	81	344



	<i>Vol.</i>	<i>Page.</i>
"Tait's knot" for tying the pedicle in ovariectomy ... ..	81	336
Talipes, Mr. Davy on cases of ... ..	77	155
----- Mr. West on resection of the tarsal bones for ... ..	79	220
----- equino-varus, Dr. Ogston on the treatment of ... ..	79	190
----- equino-varus, Mr. Baker's treatment of after infancy ... ..	80	144
----- shoe, Mr. Reeves on Schramm's universal ... ..	78	233
----- valgus boot, Mr. Davy's ... ..	77	160
----- varus, Mr. Davy's operation for ... ..	77	157
Tannic acid injections in gonorrhœa, Dr. Law on ... ..	80	1x
Tapeworm, use of cus as a tænicide in ... ..	82	xxxiii
Tapping ovarian cysts, Mr. Knowsley Thornton on the dangers of ... ..	80	270
----- Mr. Spencer Wells on ... ..	78	294
----- the intestine in certain cases of obstruction, Mr. Wagstaffe on ... ..	78	126
Tartrate of morphia, Mr. Stuart on the hypodermic use of ... ..	80	xciv
Tea-drinking, Dr. Wolfe on its effects on nutrition of eyeball... ..	80	213
Temperature, abnormally high, Mr. Teale's case of ... ..	81	39
----- in phthisis and other diseases, Dr. Waters on ... ..	81	92
----- in zymotic disease, Dr. Shea on the cause of rise and fall of ... ..	81	41
Tedious labours, Dr. Hamilton on the use of the forceps in ... ..	78	241
Tendon ligatures, Mr. Callender and Mr. Spanton on ... ..	77	173
----- for arteries, Mr. Garner on ... ..	77	xxii
Tents, tupelo, for dilating the os and cervix uteri ... ..	77	261
----- Dr. Kidd on the advantages of ... ..	80	266
Tenting, Dr. Coley on ... ..	79	315
Test for chloral, Dr. Ogston's new ... ..	78	305
Tetanus, Dr. Boon on its treatment by chloral and Indian hemp ... ..	77	60
----- Editor of Lancet on the pathology of ... ..	77	57
----- idiopathic, Dr. Read on the use of Calabar bean in ... ..	79	92
----- idiopathic, Dr. Watson Paul on atropia and chloral hydrate in ... ..	77	63
----- traumatic, Dr. Day on hypodermic injection of atropia in ... ..	80	60
Thermometer as an aid to prognosis in coma, Mr. Forster on ... ..	81	xvii
Thermometers, clinical, with magnifying lens, Messrs. Salt and Son's ... ..	76	365
Thigh, Mr. Jacobson on Stokes's method of amputation of ... ..	78	142
Thrombosis, puerperal, Dr. Barnes on the significance of ... ..	80	65
----- Mr. Pepper on ... ..	80	61
Thymol, Dr. Symes on the action and uses of ... ..	80	323
----- H. Ranke on the antiseptic use of ... ..	80	xlvi
----- H. Ranke on as a substitute for carbolic acid ... ..	78	xxxvi
----- Editor of Medical Times and Gazette on ... ..	77	137
----- gauze, Messrs. Squire's preparation of the new antiseptic ... ..	77	141
----- in skin-diseases, Dr. Crocker on ... ..	77	199
----- soap ... ..	80	xcvi
Tic douloureux, Dr. Riddell on the use of croton-chloral in ... ..	80	292
----- Prof. Liebreich on butyl-chloral in ... ..	78	307
Tinct. benzoin co. in compound fracture, Mr. Brown on ... ..	82	117
Tincture of capsicum in delirium tremens, Dr. Crowther on ... ..	79	104
----- of muriate of iron in diphtheria, Dr. Law on ... ..	80	xxxii
----- of myrrh in whooping cough, Dr. Campardon on ... ..	80	xxxii
Tinea tonsdens, Dr. Cottle on the treatment of ... ..	82	245
----- tonsurans, Dr. Liveing on the diagnosis and treatment of ... ..	31	292
Tobacco amblyopia, Dr. Berry on ... ..	82	219
----- Mr. Nettleship on the diagnosis of ... ..	81	275
Tonga, Dr. Ringer on its use in neuralgia ... ..	81	85
Tongue, Dr. Purcell on the painless method of excision of ... ..	80	168
----- Mr. Barwell's painless method of excision of the ... ..	80	165
Tonic glycerine as a substitute for cod-liver oil, Dr. Lamande on ... ..	82	lxxix
Tonics, Dr. Brunton on the action of ... ..	78	339
Tonsils, hypertrophy of, Dr. Dabney on the use of ergotin in ... ..	81	xx
Toothache, Dr. Massini on the use of gelseminum in ... ..	80	xxvi
Torsion of arteries, Mr. Clement Lucas on ... ..	80	xxix
Transfusion of human blood, Dr. Macewen's case of antiseptic ... ..	80	163
Transplantation of cornea, Dr. Wolfe on ... ..	81	256
Trephining bone in cases of suppuration, Mr. Bryant on ... ..	80	130
----- bone in chronic inflammation, Mr. Bryant on ... ..	80	125

	<i>Vol.</i>	<i>Page.</i>
Trypsin, the proteolytic ferment of pancreas, Dr. Roberts on ...	80	xc
Tuberculosis, Dr. Monro on inhalation of carbolic acid in ...	82	57
Tumour, uterine fibrous, with eversion, Dr. Duncan's case of ..	79	320
Tumours, abdominal, Mr. Heath on the diagnosis of ...	79	154
————— Mr. Knowsley Thornton on diagnosis of ...	77	288
————— Mr. Spencer Wells on the surgical treatment of ...	78	293
————— Mr. Wells on the mode of examining patients with ...	78	284
————— encysted, Dr. Foster on removal without leaving any mark	82	lvii
————— fatty, Mr. Mason on the diagnosis of ...	77	lii
————— intra-uterine, Dr. Matthews Duncan on ...	81	311
————— mammary, Dr. Gross on the diagnosis of ...	82	301
————— Editor of British Medical Journal on ...	81	330
————— ovarian, Dr. Thorburn's clinical remarks on the operation for	77	306
————— Mr. Thornton on silk ligature for securing pedicle	77	294
————— Mr. Spencer Wells on the operation for ...	77	298
————— Mr. Spencer Wells on the diagnosis of ...	78	287
————— sessile, Dr. Denham's instrument for cutting through base of	80	263
————— uterine, Dr. Kidd on the treatment of ...	80	266
————— uterine fibroid, Prof. Simpson on ...	77	273
————— vascular, Mr. Davies-Colley on the bloodless removal of ...	80	159
Tupelo tents for dilating the os and cervix uteri ...	77	261
Turpentine, Mr. White on its use in acute disease ...	77	46
————— as a local application in small-pox, Mr. Farr on ...	77	xiv
Tympanic membrane, Dr. M'Keown on the treatment of relaxed ...	82	233
Tympanum, Dr. Gruber's method of inflating the ...	77	249
Typhoid and typhus fever, Dr. Jones on the value of alcohol in ...	80	10
————— epidemic in the Caterham valley, British Medical Journal on	80	11
————— originating in diseased meat, Dr. Walder on a ...	79	16
————— fever, Dr. Bakewell on the use of aconite in ...	82	xviii
————— Dr. Cayley on the antipyretic treatment of ...	82	1
————— Dr. Cayley on the pathology and treatment of ...	81	21
————— Dr. Collie on the use of the cold bath in ...	81	25
————— Dr. Collie on the contagiousness of ...	79	14
————— Dr. Irvine on the temperature in relapse of ...	80	8
————— Dr. King on the etiology of ...	80	1
————— Dr. O'Neile on the treatment of the diarrhœa of ...	78	xvi
————— Dr. Ord on the use of the graduated bath in ...	78	36
————— Dr. Rothe on the antiseptic treatment of ...	82	9
————— Dr. Smith on the treatment of the pyrexia of ...	78	37
————— Sir W. Jenner on the treatment of ...	81	11
————— and diphtheria, Dr. Dukes on ...	79	19
————— in infancy, Dr. Paget on ...	79	21
————— in infancy, Dr. Wiltshire on ...	79	20
Ulceration of the cornea, Dr. Gunn on the treatment of ...	82	lxviii
Ulcer, rodent, Dr. Squire's treatment by erosion ...	78	359
Ulcers, chronic, Dr. Atkinson on the use of sheet lead for ...	80	227
————— Dr. Clutton on Martin's rubber bandages for treatment of	81	282
————— Dr. Cottle on the use of iodoform in ...	77	337
————— Dr. Easby on the use of iodoform in ...	81	lxi
————— Dr. Martin on application of india-rubber bandages	79	237
————— Dr. Martin on his pure rubber bandages for ...	80	228
————— Mr. McGill on the use of Martin's bandage in ...	80	226



	<i>Vol.</i>	<i>Page.</i>
Ulcers and burns, Mr. Duncan on healing by union of granulations	81	280
— and varicose veins, Mr. Callender on Martin's elastic bandage in	78	225
Unavoidable hemorrhage, Dr. Bell on the treatment of	78	264
Ununited fracture treated by the addition of dog's bone	78	147
Urethral stricture, Dr. Macdougall on Hunter's operation in impassable	79	290
— Mr. Atkinson on	77	223
— Mr. Bartleet's new graduated dilators	77	222
— Mr. Berkeley Hill on the treatment of	81	xxxvi
— Mr. Bradley on two cases of	79	285
— Mr. Cooper Forster on	78	202
— Mr. Gay on catheterism in impervious	78	343
— Mr. Gay on catheterism in	79	283
— Mr. Gould on the prevention of organic	77	213
— Mr. Pemberton's tapering metallic dilators	77	219
— Mr. Simon on the treatment of	82	190
— Mr. Teevan on the treatment of	81	247
— Sir H. Thompson on progress in the treatment of	82	180
Urethrotomy, Mr. E. Atkinson on	77	223
— external, Mr. Morgan on	79	278
— internal, Mr. Bradley on	79	289
— Mr. Durham's new urethrotome for	77	227
— Mr. Teevan on	77	234
Urinary microscope, Messrs. Salt and Son's "registered"	82	352
— test-case, Dr. Alexander's, for use at the bedside	79	361
— Messrs. Salt and Son's new	82	350
— Messrs. Salt and Son's new pocket	80	326
Urine, Dr. Birt's method of testing for sugar in	77	341
— Dr. Pavy on the tests for sugar in	77	113
— Dr. Ralfe on the effects of alkalies on the	78	345
— Dr. Ralfe on alkalinity of, associated with a form of dyspepsia	82	87
— Dr. Ralfe's copper test capsules for detecting sugar in	82	xxxv
— in albuminuria, Dr. Brunton and Mr. D'Arcy Power on the	77	105
Uriniferous tubes, Dr. Sawyer on casts of the	77	122
Urticaria, Dr. Bulkeley on the use of Startin's mixture in	82	lvii
Uterine and vaginal injections, Mr. Greenway's new form of syringe for	80	264
— catarrh, chronic, Dr. Bantock on the treatment of	80	260
— douche, Mr. Masterman's	81	lxxv
— fibroids, Mr. Jackson's case of spontaneous expulsion of large	82	287
— Prof. Simpson on the medicinal treatment of	77	278
— Prof. Simpson on the surgical treatment of	77	284
— Prof. Simpson on	77	273
— fibrinous polypus, Dr. Matthews Duncan on	82	275
— fibrous tumour, with inversion, Dr. Matthews Duncan on	79	320
— hemorrhage, Dr. Atthill on hot-water injections in	81	337
— Dr. Bennet on plugging the cervical canal in	80	249
— Mr. Kerr on nitrite of amyl in impending death from	81	lxviii
— and parturition, Dr. Carriger on ipecacuanha in	83	258
— following abortion, M. Letulle's case of	80	lxxxii
— inversion, Dr. Williams on elastic pressure in	79	319
— chronic, Dr. Wilson's treatment of	77	lx
— following delivery, Dr. J. Braithwaite on	77	314
— medication, Dr. Battey on iodised phenol in	81	324
— Dr. Godson on the possible dangers of	81	329
— Dr. Miller's new instrument for	81	328
— Dr. Playfair on	81	318
— Dr. Tilt on	81	323
Uterine polypi, Dr. Fleetwood Churchill's cases of	77	271
— repositor, Dr. Aveling's	80	248
— Dr. White's	80	242
— retraction, Dr. Duncan on weak labour from premature	77	257
— tumours, Dr. Kidd on the treatment of	80	266
— Dr. Matthews Duncan on	81	311
Uterometer, Salt and Son's improved	80	279
Uterus, Dr. Atthill on the treatment of inversion of the	80	238

	<i>Vol.</i>	<i>Page.</i>
Uterus, Dr. Aveling on the treatment of inversion of the ... ..	80	245
———Dr. Bantock on the mode of applying liquids to interior of ...	80	263
———Dr. Barnes on the state of in placenta prævia ... ..	81	309
———Dr. Coley on the operation of dilating with tents ... ..	79	315
———Dr. J. Braithwaite on retroflexion of the unimpregnated ...	77	310
———Dr. J. Braithwaite on the treatment of sub-involution of the	82	270
———Dr. Matthews Duncan on displacement and descent of the ...	82	lxxi
———Mr. Ford's case of complete inversion of the ... ..	78	268
———Mr. Knowsley Thornton on displacement and descent of the	82	lxxi
———Mr. Sincock's case of rupture of the ... ..	82	290
Vaccination with calf-lymph, official introduction of ... ..	82	lxxix
Vaporifer, Arnold and Sons' patent ... ..	79	363
Varicocele, Dr. Gould on its radical cure by the galvanic ecraseur ...	82	204
Varicose ulcers, Mr. Callender on Martin's elastic bandages in ...	78	225
———Mr. Gay on the treatment of ... ..	78	227
Varix, Dr. English on subcutaneous injection of alcohol in ... ..	77	xxiii
Vaselin, Dr. Smith on the therapeutical uses of ... ..	80	321
——— and unguentum vaselini plumbicum in skin diseases, Kaposi on	80	lix
Vegetable antiperiodics, Dr. Erskine Stuart on ... ..	77	43
Venereal diseases treated without mercury, Dr. Boileau's cases of ...	80	196
——— sores, Dr. Cottle on the use of iodoform in ... ..	77	336
Venous nævi, Mr. Bontflower's successful cases of ... ..	77	334
Vesicant collodion, Dr. Hisch on the preparation of ... ..	82	lxxx
VolSELLA, Dr. Simpson on the use of in gynæcology ... ..	80	233
Vomiting of pregnancy, Dr. Thomas on koumiss in ... ..	77	xxvii
Vulcanite plugs for dilating the cervix uteri, Mr. Lawson Tait on ...	81	309
Wall-paper poisoning, arsenical, Mr. Hogg on ... ..	80	303
Waterproof surgical dressing paper, Dr. Keen's ... ..	82	lxxx
Wool-sorter's disease, Dr. Bell on ... ..	82	52
Wound-drainage, Mr. Chiene's system of ... ..	78	179
———Prof. Lister on horse-hair drainage ... ..	77	142
Wounds, Dr. Vogel's new elastic suture for ... ..	80	liii
———Mr. Callender on the treatment of ... ..	78	231
———Mr. Chiene on lessening the expense of antiseptic dressings for	77	138
———Mr. Cowen on the treatment of ... ..	77	168
———Mr. Gamgee on the treatment of ... ..	79	243
———large open, Prof. Lister on the antiseptic treatment of ...	81	140
———of superficial palmar arch, Mr. Bellamy on acupressure in	78	182
———surgical, Mr. Savory's treatment of ... ..	80	112
Wrist, Mr. Fagan on diseases of the, and case of excision of ... ..	82	122
Zinc, oleate of, Dr. Crocker on its use in eczema ... ..	79	299
Zymotic diseases, Dr. Grimshaw on the prevention of ... ..	78	8
———Dr. Shca on the rise and fall of temperature in ... ..	81	41











